The Builder.

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INIGO JONES is a great name in our art; any additional information concerning him will be welcomed. Let us look through the short memoir of the architect written by Mr. Cunningham, and recently published by the Shakspeare Society, and see if it will afford us any notes likely to interest our readers. The same volume contains a series of sketches by Inigo, in connection with the apparel of characters in the Royal entertainments of King James I. and Charles I., made, if not during the lifetime of Shakspeare, very shortly after his decease. These, if they do not of themselves quite justify Vandyck's assertion that Inigo's skill in designing with his pen was "not to be equalled by whatsoever great masters of his time, for boldness, softness, sweetness, and sureness of his touches," show singular command of the pencil and knowledge of the figure. This facility led to his frequent employment in the getting up of masques and other performances at Court. "His public appointment," says Mr. Payne Collier in the preface to the volume before us, "was in some sort connected with these representations, and we know from many authorities, particularly from several remarkable passages in Ben Jonson's "Masque of Queens," comprised in the present volume, that for the contrivance of the machinery and for the painting of the scenes themselves, the poets of that day were very commonly indebted to Inigo Jones." The Duke of Devonshire has in his possession several boxes of his designs for scenery, some of them splashed with the distemper used for the purpose of producing them for use. In the explanation of some of these sketches Mr. Planché has given his aid, and, by his knowledge of early costume and the antiquities of the stage, has materially increased the interest of the volume.

Jones was born in 1573, and christened in St. Bartholomew's Church, Smithfield. Walpole says he was bound apprentice to a joiner. His father, who died when he was 24, had little to give him, and from his will, which Mr. Cunningham found in Doctors' Commons, still less to leave him. Our author doubts the received story that Jones was sent to Italy by either Lord Arundel or Lord Pembroke, Jones's own words, in his work on Stonehenge, do not bear it out; for he says there simply,—"Being naturally inclined, in my younger years, to study the arts of design, *I passed into foreign parts* to converse with the great masters thereof in Italy:" where, otherwise, he obtained funds, however, does not appear. He was engaged for some time in Denmark, and we first hear of him in England in his 32nd year, when, in conjunction with Ben Jonson, afterwards his violent detractor, he prepared a masque for the Queen of James I., the sister of the King of Denmark, by whom he had been employed. Jonson's description of the "bodily part" of this, "which was Master Inigo Jones's design and act," is the earliest notice we possess of the use of scenery in stage-entertainments. Some curious particulars are given from Ben Jonson's works, and other sources, of the bold inventions by Jones for other similar entertainments.

An entry of the payment of 13*l.* 6s. 8d. to "Inico Jones," in the books of the Treasurer of the Chamber to the King, shews he was then employed "carreinge Lrs for his Mat'ᵉ servyce into Fraunce." In 1610-11 he was again engaged with Jonson on a masque for the queen, and the bill of costs discovered amongst the Pell Records contains, "*Imprimis* to Mr. Benjamin Johnson, for his invention 40*l.* *Item* to Mr. Inigo Johnes, for his paynes and invention 40*l.*;" besides a previous payment to Jones of 238*l.* 16s. 10d., apparently for money expended. In 1610 Prince Henry was created Prince of Wales, and Inigo Jones obtained the appointment, in his new household, of Surveyor of the Works.

"The fees he received are recorded in the roll of the Prince's expenditure:—

"'Inigoe Jones, Surveyor of the Woorkes, for his fee, at iij$^{s}$ per diem, for one whole yeare and a half and xl$^{ti}$$^{e}$ days, begonne the 13$^{th}$ January, 1610[1], and ended at the feast of S$^{t}$. Michael the Archangel, 1612.—lxxxviij. ij. vj$^{d}$.'

"'Inigoe Jones, Surveyor of the prince's Woorkes, for his fee by lres pattentes, at iij$^{s}$ per diem, for xxxvij dayes, begonne the first of October, 1612, and ended the vjth of November followinge .... cxj$^{li}$.'"

This appointment terminated with the death of the Prince in 1612. He now paid a second visit to Italy, taking works of reference with him, and noting his observations.

"His copy of Palladio (the folio edition of 1601), preserved at Worcester College, Oxford, contains an entry dated 'Vicenza, Mundaie, the 23rd of September, 1613;' and one of his sketch-books (a thin octavo, in a parchment cover, with green strings, now in the possession of the Duke of Devonshire) exhibits his name on the fly-leaf, with 'Roma, 1614,' written in his fine bold hand beneath it.

The copy of Palladio is as rich with notes in Inigo's handwriting as the Langbaine, in the British Museum, is with the notes of Oldys. One of his entries commences thus:—'*In* the name of God, amen. The 2 of January, 1614, I being in Rome, compared these desines following with the Ruines themsealves. Inigo Jones.' At folio 64 he has written:—'The staires at Chambord I saw, being in France, and there are but 2 wayes to ascend, y$^{e}$ small hath a waal, w$^{h}$ windowes cut out, but this, y$^{t}$ seems, was discoursed to Palladio, and he invented of himseelf thes staires.' His Palladio was his inseparable companion, wherever he went; and contains the names of 'Andrea Palladio' and 'Inigo Jones,' coupled together in his own handwriting—such was his admiration and such his ambition. At b. iv., p. 41, occurs the following entry:—'The Temple of Jove, vulgarly called frontispicio di Nerone, or a basilica, sum call it a Temple of the Sun, and that is likelyest.' The book was with him, as appears from his own entries, at 'Tivoli, June 13, 1614;' at 'Rome, 1614;' at 'Naples, 1614;' at 'Vicenza, 13 Aug., 1614;' and at London, '26 January, 1614;' *i.e.*, 1614-15. Nor did he cease to carry his Palladio about with him even in his progresses in England, as surveyor of the works. The following is written on a fly-leaf:—

'The length of the great courte, at Windsor, is 350$^{fo}$, the breadth is 260: this I measured by paaces the 5 of december, 1619.

The great court at Theobalds is 159$^{fo}$, the second court is 110$^{fo}$ square, the third courte is 88$^{fo}$—the 20 of June, 1621.

The front of Northampton Ho. is 162$^{fo}$, the court is 81$^{fo}$.

The first court at Hampton Court is 166$^{fo}$ square.

The second fountaine court is 92$^{fo}$ broade and 150$^{fo}$ longe.

The Greene Court is 108$^{fo}$ broade and 116$^{fo}$ longe, the walkes or cloysters ar 14$^{fo}$ betweene the walles. September the 28, 1625.'

Of the Temple of Jove he thus writes, June 13, 1639:—'Clemente scolter Romano tould mee that the ruines of this temple is pulld all downe, to haue the marble, by the Constable Barbannos Collona, by the popes permition: this was the noblest thinge which was in Rome in my time. So as all the good of the ancients will be utterly ruined ear longe.'"

In 1615, he returned to become surveyor of the works to the king.

"His pay commenced from the 1st of October in that year; at the rate of eight shillings a day for his entertainment, eighty pounds per annum for his 'recompense of availes,' and two shillings and eightpence a day for his riding and travelling charges. His riding expenses were subsequently raised, but the fees I have quoted were the fees of the office at the period of his appointment. He had other emoluments. The warrant to the Master of the Wardrobe, on his first appointment, dated 16 March, 1615-16, directs that he should receive 'five yards of broad cloth for a gown, at twenty-six shillings and eightpence the yard; one fur of budge, for the same gown, price four pounds; four yards and a half of baize, to line the same, at five shillings the yard; for furring the same gown, ten shillings; and for making the same ten shillings.' The cost of the livery was therefore 12*l.* 15s. 10d.; and this sum was paid to him yearly, as surveyor of the works, by the Master the Wardrobe."

The pressing nature of his duties brought him at times extra rewards: notes of a few of these Mr. Cunningham was fortunate enough to discover in the Accounts of the Treasurer of the Chamber:—

"To Inigoe Jones, Surveyo$^{r}$ of his Ma$^{t}$ Workes, the Comptroller, M$^{r}$. Carpenter, and Clerke of the Woorkes at Whitehall, vpon the Councells warr$^{t}$, dated *xv$^{to}$ Nouembris*, 1620, for performing certen workes in the Starchamber in ffebruary 1616, January and February 1618, and Aprill and Maye 1619, by the space of fortie dayes, and for making of a Hearse for the Queenes funerall . . . . . l$^{li}$.

"To Inigoe Jones, Surveyo$^{r}$ of the Woorkes, Thomas Baldwyn, Comptroller, and Will$^{m}$ Portington, M$^{r}$. Carpenter, upon the Councells Warr$^{t}$, dated *ultimo Decembris*, 1620, for makeing readye and repayringe Elye House, in Holborn, for the Spanish Ambassador . xx$^{li}$."

On the 12th of January, 1618-19, the old Banqueting-house, Whitehall, was destroyed by fire. By the 1st of June, in the same year, the ground was cleared, Jones ready with his design, and the first stone of the new Banqueting-house laid. Relative to this, there is the following entry in the accounts of the Treasurer of the Chamber:—

"To Inigo Jones, upon the Counsells warr$^{t}$, dated 27$^{th}$ June, 1619, for making two several models, the one for the Star Chamber, the other for the Banquetting House . xxxvij$^{li}$."

This entry escaped Vertue and Walpole, but a more curious discovery was the roll of the "Charges in Building a Banqueting-house at Whitehall, and erecting a new pier in the Isle of Portland," preserved at the Audit Office, and of which we gave the substance in a previous number.*

For the Banqueting-house the "Knighte Marshall's Man" was employed to impress workmen. In a letter to the Earl of Arundel, dated 17th August, 1620, Jones says:—"The Banqueting-house goith on now well, though the going of the masons awaye have byne a great hinderance to it."

"While the works at Whitehall were in progress, a commission was appointed by the Crown 'to plant and reduce to uniformity Lincoln's Inn-field, as it shall be drawn by way of map or ground plot by Inigo Jones.'"

Jones's quarrel with Ben Jonson for putting his name on the title-page of a masque before that of Jones, and the poet's bitter poetical satires against Inigo, are well known. In an "expostulation" with *Iniquo* Jones, he sneers at his "twice conceived and thrice paid for imagery," and in the play called "A Tale of a Tub" he introduced the "Master Sur-

* See page 302, Vol. VII.

veyor" as "Vitruvius Hoop," but through the exertions of Jones this character was struck out by the Master of the Revels. As "Medlay, the joiner, In and In, of Islington," his peculiarities are ridiculed.

——"In and In
Draws with no others in's projects: he will tell you
It cannot else be feazible or conduce:
These are his ruling words, please you to hear 'un?"

These words, *feasible* and *conduce*, are elsewhere repeated, as characteristic expressions.*

Mr. Cunningham excuses Jones's application of a classic portico to the Gothic St. Paul's, on the ground that it was the wish of the king that the whole edifice should be rebuilt, and that the portico was not an addition to the old building, but an instalment of a new one. To get room round St. Paul's, Inigo removed St. Gregory's Church, and, with the dispute with the parishioners that followed, began his troubles, which, as most of our readers know, lasted him till his death, and hastened it. Webb, his executor, who married a kinswoman of Jones, and is sometimes erroneously called his son-in-law, says that he was neither ambitious nor arrogant, but it must be confessed that he displayed a domineering and dictatorial spirit in this controversy. He was fined as a Papist, and imprisoned, and died full of sorrow at Somerset House in the Strand. The date of his death has been erroneously stated by various writers, and it was left for the author of the present memoir to settle, by the register of St. Bennet's, Paul's Wharf, where Inigo was buried, that it took place on the 21st June, 1652.

After a list of the works attributed to Jones, our author says:—

"That the designs of Inigo were not restricted to a new Whitehall, and palaces at Greenwich, Newmarket, and in the Strand (on the site of Somerset House), the portfolio of his drawings at Worcester College affords most striking evidence. In this valuable folio are found, 'upright for my Lord Maltravers his house at Loatsbury, 1638'—'Mr. Surveyor's designe for Sr Peter Killigrew's house in the Blackfriars'—'ceiling of the Countess of Pembroke's bed-chamber'—'ceiling of the great staire at Wilton'—'for the ceiling in the Cabinet-room, Wilton, 1649'—'ceiling of the Countess of Carnarvon's bed-chamber'—'ceiling of the Countess of Carnarvon's withdrawing-room'—an enriched and gilt ceiling, in panels, for York House, with the Duke of Buckingham's motto, 'Fidei Coticula Crux,' worked in, as on the Water-gate; 'wainscott and moulds for the Consultation-room at Physician's College,' dated 1651, and marked 'not taken;' with designs for temples (Parthenon-like, with statues and pediments filled with sculptures) for churches, one of which Gibbs must have seen, and another with obelisks on towers—'for a Fountain in a Wall at Greenwich, 1637' — for 'Exchanges or Merchants' Piazzas'—and for the 'Office of the works at Newmarket.' In the same folio I observed an exquisite pencil drawing for a portion of the Banqueting-house, with the statues; an early and different design for the church in Covent Garden; a most delicately pencilled drawing of the portico to St. Paul's, with the statues; a design 'for the modell of the Star Chamber,' dated 1617; and two 'uprights' (one especially fine and large) 'of the Palace at Somerset House,' dated '1638,' and marked 'not taken:' an elevation and ground-plot for a new house for the Earl of Pembroke, on the site of Durham House, in the Strand, and signed 'John Webb.' The ground-plot is marked 'not taken,' and dated 1649."

Mr. Cunningham concludes his interesting memoir, by pointing out that the rambling and incoherent manuscript notes about Jones, written in the copy of "Stonehenge Restored," formerly in the Harleian Library, and usually ascribed to Philip Herbert, fifth earl of Pembroke, could not have been so, since the earl died in 1650, and the book in which they were written was published in 1655. He is disposed to attribute them to Sir Balthazar Gerbier.

* Medlay is made to say that his father named him
——"In and In Medlay, which serves
A *joiner's* craft, because that we do lay
Things in and in, in our work. But I am truly
*Architectonicus professor*, rather;
That is, as one would say, an architect."

## PROFESSOR COCKERELL'S LECTURES ON ARCHITECTURE, AT THE ROYAL ACADEMY.

IN the first lecture on the 3rd inst., the professor hailed the returning season of his labour with pleasure, but with great solicitude, lest he should fail to make them useful to the student. He enlarged, after the example of Vitruvius, on the qualifications and education required for the practice of the art and science of architecture, and exhorted the students to appreciate justly the advantages which London, of recent years, had presented, in the two colleges of our University and the School of Design, in addition to the Royal Academy. For success in his career, nature should have given him a constructive faculty, a sense of beauty, and an observant quick inventive mind. These qualifications should be strengthened, enlarged, and rendered more acute by the study of the mathematics. By these he would acquire precision of thought and expansion of capacity, and would be enabled to appreciate numerical and geometrical magnitude, so essential to his practice, that Sir C. Wren had given these precedence to every other qualification; for, great as he was in the poetical and imaginative of our art, the motto he had adopted was "numero, pondere, mensurâ."

But vast as are the advantages of this branch of intellectual culture, it had its defects, in giving too partial a direction to the mind, to the prejudice of other pursuits. Great mathematicians have often appeared to be wholly unfitted for other studies; and it was consoling to the simple workman to find the senior wrangler, with all his advantages, often at a non plus before a simple architectural problem. Indeed, proof and demonstration are the office of the mathematics; science explains what art and nature invent,—as, indeed, consent of language points out, when we say "arts and sciences,"—giving precedence to intuitive invention. Mechanics, in its various branches, statics and dynamics, were no less important to the equilibrium of his buildings; in which our Gothic cathedrals especially, and, indeed, minor edifices on clay foundations, furnished continual sources of study and observation. Animal mechanics were not only advantageous to our studies, but (in a manufacturing country), also to our pockets, patents being frequently established on the intelligence and adoption of nature's inventions. Optics and perspective had vast influence on our art; the latter was lamentably in abeyance in our scenography at this period, effect and colour being substituted. Of this fact, the drawings of Paul Sandby, Malton, and others of the last century, Mr. E. Cook and Mr. Billings amongst the few correct of this, are sufficient proofs. In this academy very excellent and accessible lessons were given by Mr. Knight. But this science, accompanied by the essential discipline of the hand in free and ornamental drawing, were admirably taught in the School of Design,—a most precious advantage of recent date in our general education. Anaxagoras had said, that it was questionable whether the supremacy of man was due more to the head than the hand. Handicraft with the workman's tools, and mastery with the pencil, were essential to the architect; indeed there lay his eloquence. Some of the most able architects had passed a year or more at the carpenter's bench. But the literary and poetic faculty was no less to be cultivated; fine thoughts would only come from fine spirits, nurtured by the muses; criticism and the æsthetics would accompany these. Since style in architecture was generally an adoption of former tastes, history was essential; else anomalies and inconsistencies were for ever inditing nonsense verses. The small door, the emblem of the "strait and narrow way," was applied to the heathen temple, or the proud Templar door (suited to the colossal god within) was mistakingly applied to the Christian Gothic temple. By history we should know that the present cultivated times are most analogous to those of Greece and imperial Rome as respects materials and skill. Since the days of Trajan or Hadrian, no such stones have been used as have recently been employed at the British Museum, where 800 stones from 5 to 9 tons weight form the front. Even St. Paul's contains no approach to these magnitudes; but for cheapness and for taste we love to build with Gothic scantlings of a few pounds weight.

The professor then continued his hints on education, through the architect's office,—the idle talk, detraction, and criticism therein: the student should measure himself with his rivals, for prizes in competition; he should watch the course of business — the war of life — the dangers to reputation by a single failure—the perils of renown and fortune—the eternal antagonism with the world, with the contractor, the workman, the law; the suspicions of the employer—the aspersions of malignity—the intricacy of accounts—the duty of conciliation and benevolence to all men. Great is the experience learned in a good office by the diligent observer. Then travel presents its dangers, in excess of liberty, and forgetfulness of duty and discipline, no less than its immense advantages in free and unbiassed observation of innumerable examples and foreign practice. Finally, the practice of the profession, in every social grade, from the prince to the labourer, offered, to the skill and ability, the perseverance and philosophy, of the architect, the means by which a good man might be made more perfect,—perhaps surpassing any other professional career.

## ARCHITECTURE OF INDIA.

### ROYAL INSTITUTE OF BRITISH ARCHITECTS.

AN ordinary meeting of the Institute was held on Monday, the 7th, Mr. Bellamy, V. P., in the chair, when various books were presented, and Mr. R. M. Phipson was elected an associate.

With reference to the paper on glass read at the previous meeting, Mr. Papworth mentioned that they were now manufacturing in France plates of glass 20 feet by 12 feet, and 1 inch thick, for partitions.

Mr. Donaldson said that in a leading article in the *Gardeners' Chronicle*, of December 8th, on the "rough plate glass case," which had been referred to, very improper imputations had been cast on the parties who had used *blown* plate glass, and the witnesses who had confirmed them in their right to do so. He had himself since obtained additional evidence that *blown* plate was known long before *cast* plate.

The Chairman said that in "Chambers's Cyclopædia," published nearly 100 years ago, was given the mode of "*blowing* looking glass plates," and that the priority of the mode was unquestionable.—The Chairman announced that Mr. C. Lee had sent in his resignation as a fellow of the Institute, and that it had been accepted.

Mr. James Fergusson then read a paper on "The Architecture of India," confining himself on this occasion to the *south*, as he had on a previous occasion to the *north*, and illustrating his remarks by reference to a fine series of drawings by native artists, placed at his disposal by General Menteith, and the Asiatic Society. Following our notes of what Mr. F. said, — References to the early history of southern India are very scarce. There are no traces of a building earlier than the fifth or sixth century of our era, and few before the tenth or eleventh. The number of the temples in the south is extraordinary, and their size enormous, the outer enclosure being often 1,000 feet square. He knew of a hundred such: in the north there is nothing of the sort. The buildings in the south may be placed under four heads, namely,—

The *Vimana*, or Temple proper;
The *Gopura*, or Gateway;
The *Mantapa*, or Porch; and
The *Choultry*, or Hall.

The Vimana is the shrine: it is always square, pyramidal, and has a domical or bulb-

ous termination. The basement is of granite, and contains a *cubical* apartment (always), the shrine for the god. The upper part is usually of solid brick, plastered with chunam, and although in many cases 1,000 years old, as sharp and perfect as when first erected. The decoration, story above story, is a repetition of miniature shrines, displaying sometimes, on each face of the Vimana, from 500 to 1,000 statues.

The Gopura is always pyramidal, like the Vimana, ten or twelve stories in height, but has a way through it, and invariably a *flat* top. There is one of these in front of every Vimana.

A Mantapa, generally columnar, is also usually attached to each Vimana. Some of these are of wonderful extent; one is 4,000 feet in length, consisting of a wide middle aisle, so to speak, and two smaller aisles on each side. The middle space is covered by bracketting the stones in a curious manner, the arch being always avoided in Indian architecture where possible.

The Choultry in some cases is of enormous size, having 100 columns in length and 10 in width, or 1,000 columns in all: they are, indeed, popularly called "halls of a thousand columns;" and this is usually literally true. When it is remembered that each of these columns is ornamentally carved from capital to base, that these carvings are usually all different in design, and that the material used is granite, it must be admitted that they are wonderful works.

The inclosures around the temples were added one beyond another, as their reputation increased or money became available. The great hall is usually placed in the third enclosure. Enormous stones were sometimes used: the granite door jambs of one unfinished gateway are 44 feet high.

The principal architectural defect in these groups of buildings is the comparatively small size of the central object, the temple proper: there are numerous enclosures and lofty gateways leading to what seems nothing. At Tanjore and some other places, however, it is not so; the Vimana is the principal object, as it ought to be. As to the supposed connection between Egyptian and Indian architecture, it may be mentioned, without attaching much importance to it, that the temple at Carnac, for example, has the central object low, with several inclosures, one round the other, and has lofty propyla, or gateways; these Indian temples, too, resemble in arrangement the temple at Jerusalem, as described by Josephus. There is nothing to be gained from these buildings for our own use; it may be mentioned, however, that the art in them becomes more pleasing as they are better understood. Not many years ago, Gothic architecture was considered a mere jumble, without order or regularity; but we now see it differently. The Indian temples show the variety of forms which stone may be made to take. At one time the Roman details were thought the only legitimate forms; then it was found that these were but a debasement of the Greek, and the Greek should alone be copied; and now the Gothic forms alone are imitated. In truth, however, the forms which may be given to stone are myriad-fold. There is one very consolatory impression to be derived from the Indian temples. These were erected by an uncivilized people—without a literature, without a history. But they went to their heads instead of their books, and thought only of the effect that could be produced. We at the present day are so superior to them, said Mr. Fergusson, that if we took the same course we must immensely surpass them.

Mr. Tite said that, after having examined Mr. Catherwood's drawings of buildings in Yucatan and other parts of Mexico, he had endeavoured, with much care, to trace the people philologically, but had failed. He fancied, however, that there was a connection between them and the Indian temples. Notwithstanding the enormous distance which separates them, there is a certain kind of resemblance to the buildings of Java which deserved investigation. Of its connection with Egyptian architecture he thought but little.

Mr. I'Anson thought the Government or the East-India Company should investigate the architectural works of India.

Mr. Fowler reminded the Institute of their possession of a very interesting series of native drawings, illustrative of Indian antiquities, and agreed in the necessity of the Government or the Company preserving records of the buildings.—Mr. Godwin said, with reference to this, that the periodical press in India had become awakened to the importance of preserving and illustrating the architectural monuments of the country, and were pressing it upon the Company.——Mr. Fergusson said something had been done by the Company; but the late wars had checked the operations.

In reply to an inquiry by Mr. Tite, Mr. F. stated that *chunam* is simply burnt oyster shells,—that is, pure lime without any admixture, kneaded with a small quantity of water. It is rubbed when moist, and takes a high polish.——Mr. Wild said the strength of chunam depended greatly on the amount of labour bestowed in working it.

Mr. Cockerell was anxious to express his thanks for having been introduced to a new branch of the architectural family, so different from that found in Northern India. With such co-operators as Mr. Fergusson, the Institute records would become a treasury of art of no small value. As to the analogy of styles, it was worth noting that, difficult as it was to connect nations by their language, the architecture of all countries showed that men have always been the same. The Deity had not left himself without a witness. The climate would make some difference in the buildings raised, so would the materials: but the same religious feelings which had led crowds from all parts to Notre Dame of Loretto, was to be traced in the added enclosures of increasing size around the Indian temples described by Mr. Fergusson.

## FLUVIAL WATERS AND SEWAGE.

NOT many regions of earth are blessed as the British Isles with a bounteous and continuous flow of rills, streams, and rivers, and this privilege is conducive not only to the fertility of the soil, and the beauty of the landscape, but especially to the health of man. It is allowed that no sources of water are so well adapted to the purposes of life as nature seems to have designed from the amplitude of provision; and yet mankind seem hitherto to have paid little attention to the *conservancy* of these vital supplies. To those resident in our genial clime, the value of these advantages are scarcely appreciated, but he who has wandered through "a barren and dry land where no water is," is forcibly struck with the beneficence of Providence in this particular, when he reverts to this cereal soil, and its rivers of living water. In Australia and her boundless tracts of wood and plain, the softness of the clime is of little avail, from the paucity of rivers; and those parts where settlements have been made, are selected from the fact that they are absolved from the unspeakable misery of drought by this first natural postulate for habitation—a river.

From this circumstance, it is clear that the great continent of New Holland never can be a very populous, although it may be a pastoral country, for there rain falls not in quantity sufficient to reserve tanks for the nutriment and accommodation of the cattle and the stranger.

In early ages this country fared well as to its flow of water, but since population has multiplied so exceedingly, the effects of neglect have seriously impaired the purity of our fluvial waters.

It is not twenty years since sea-going vessels sent only up to Vauxhall at ebb tide for sea store; and the Thames water was accounted the best in the world for the purpose.

Now the state of the river renders it hardly eligible at Twickenham. As the community has increased, so have habitations; and the smallest tributary of the Thames is, according to its volume, hardly less vitiated than the great confluent torrent. Along the courses of the Wandel, Mole, Wey, Gode, Loddon, Kennett, Evenrode, Wainrush, Ock, Evesham, and multifarious rills which flow into the Thames, how many factories and mills (fulling, dye, stuff, and others), how many homesteads, farms, mansions, hamlets, villages, and towns discharge their fœculence into their several and separate currents!

All these combining, progress through still larger communities, and from the first to the last no care hath up to this day been taken to preserve for the people the purity of that element which was evidently intended by the Creator to be the healing nutriment of his creatures.

To preserve the quality of the main trunk, it is first necessary to guard the tributary conduits; and this cannot be done without diverting from the natural fall (the course of rivers) all pollutions of what kind soever, nor without enacting municipal laws for the regulation of all sewage and drainage.

So much has been elicited from discussions and treatises originating in the great sanitary movement, that it is not necessary to iterate modes which have been divulgated of effectuating so great a benefit; but perhaps it may not be out of place to observe, that as to the great metropolis, a place suggests itself to every reflective mind for its sewage as the one only practicable, without great expense, and that I will try to develope in but few words.

In the first place, it is desirable to retain, and to improve where requisite, the present system of sewers, and, if they do not work well, this is mainly chargeable to the deficiency of water. As the river is the lowest and most natural outlet for the whole reticulation, it will be requisite, in order to preserve those sewers that disembogue into it, to take a lower range; therefore the line of the *main sewer* should be in the bed of the river.

As there are several parts of the town near the river bank (such as Southwark, Pimlico, &c.), 5 or 6 feet *below high-water mark*, it will be requisite to sink the *main conduit* below that level say 10 feet.

For this purpose a main sewer should be constructed of brick and cement from Westminster-bridge on the north side, as far as the "Shades," near London-bridge, to be built intermediate between high and low-water mark; and for this purpose a line of coffer-dams should be struck in to the extent of 200 or 300 yards at one reprise. The tunnel or sewer (which might be erected in an open cutting) being completed, the piles might be drawn, and so on in continuation.

Westward of Westminster the work must be continued by tunnelling past the Houses of Parliament on the north side, and thence westward through the Lots towards Fulham in an open cutting; this would suffice to take all the sullage of these parts. In like manner from London-bridge, and to clear it on the north end, a tunnel should also be continued eastward towards the open spaces at Limehouse, or even Plaistow level, at which point such works as might be requisite for exhausting the sewer, disinfecting and desiccating, should be erected.

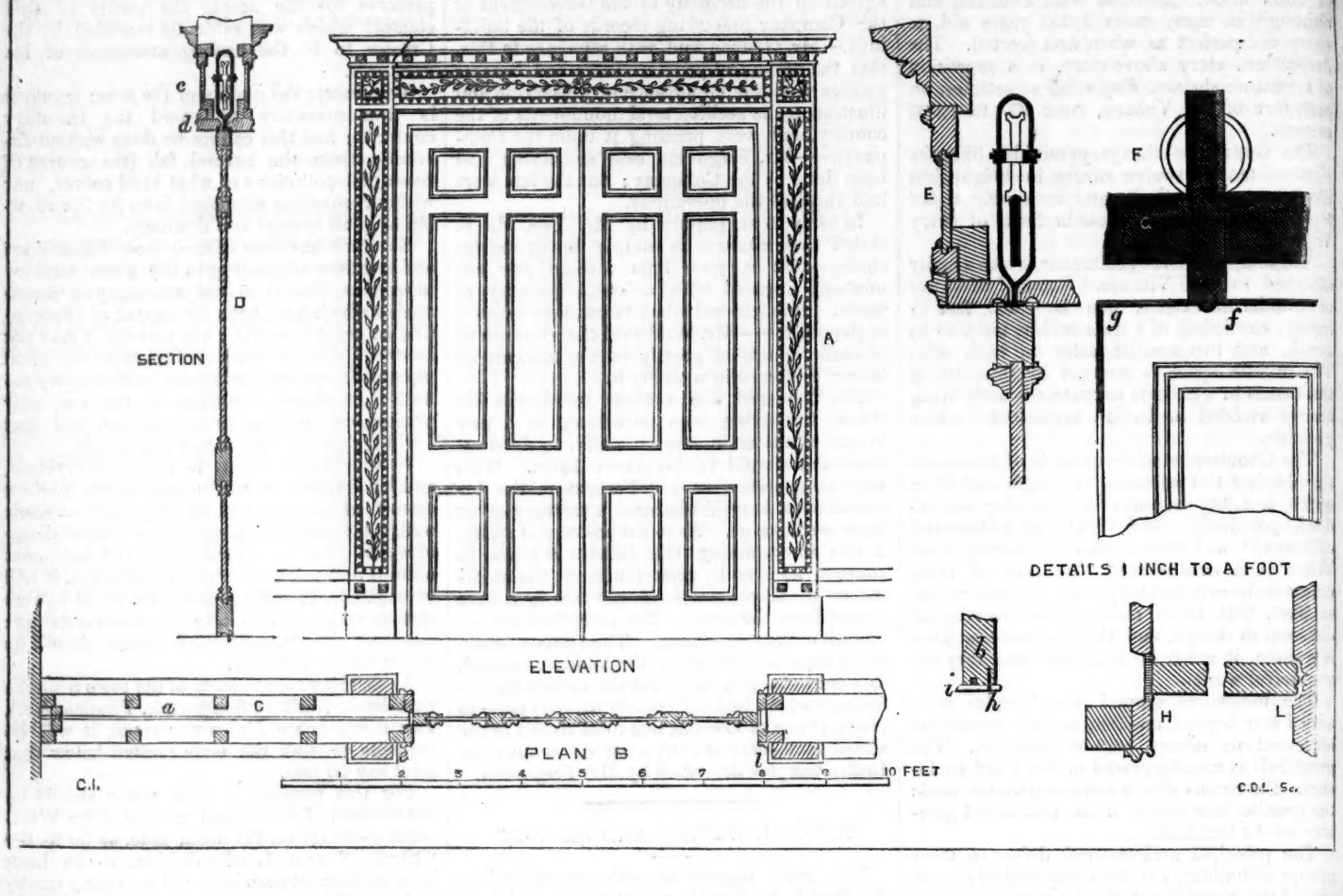
Of the value of such works, and the feasibility thereof, enough has been said; therefore it is not necessary to add more than that the smaller expense and greater promptitude of this plan must give it the preference before those of *centripetal tunneling*, which would require the total subversion of all the existing metropolitan sewers.

This main sewer, or cloaca, need not be sunken more than three or four feet below the slime of the river's bed, and into it all the sewers which now discharge their flow into the river should be also graduated beneath the bottom exposed at low water: no interruption could thus be caused to navigation or commerce; but, on the contrary, those foetid, slimy shoals which disgust the passenger might be removed, and a strand remain approachable on the ebb of tide.

With reference to wharfages, it is obvious that nothing can be more unfavourable than the present state of the river, which is wasteful of great natural facilities, obstructive of traffic, and prejudicial to health.

The level of the main sewer being perhaps 20 feet under that of Thames-street, the portion which passes through densely-populated places must be tunneled: for the rest, the construction might be in an open trench, leading to that locality, near or beyond Limehouse, most available for the attainment of a large area whereon to plant machinery for raising the sullage into a tank or reservoir adequate to the process of disinfection, &c.

On the Surrey side of the river a similar cloaca should be formed to receive the tribute




of voidance, which could also be conducted to a suitable level near Deptford, so as to be equally efficacious for the expurgation of the river, and the abatement of pestilential effluvia in that Beotia of London.

Nothing is here said of quay walls to our crowded, thrifty, and fœculent rivage: the modern taste for architecture and embellishment,—the march through stucco to marble and granite,—will, in its train, induce such improvements; but it must not be omitted to remark, that sewage without flushing can be of little avail, and that until a proper expenditure of clean water be dispensed through the whole reticulation, no design, however perfect, no performance, however complete, can render the abode of millions other than a manor for the intermittent havoc of pestilence.

To expect, from rain-water or Artesian wells, a supply commensurate with the demand for this purpose, would be idle; therefore, the clear, natural, and rightful source is the father of floods—the Thames. At Staines, the water is sufficiently pure for such a supply; it is but 16 miles in a straight line from the metropolis (although above 40 in its course), and, considering the volume at that point, as pure as even the Colne: besides that, save the New River, all supplies are deduced, therefrom within *tidal influence!* Considering that the high road (a straight line from Staines) offers a free and gratuitous course for that supply,—there it would appear to be, of all other points, the most eligible.

With reference to the outcry against water companies (raised not without much reason), it never should be lost sight of that private enterprise is the origin of every great national advantage of our day—railroads, insurances, water works, nay, the East-India directory. Private enterprise is not the tyrant, but the stimulant of competition,—and the centralization of public boards and public works discover nothing very energetic in their progress, nor very beneficent in their result.

QUONDAM.

THE ADMIRALTY'S ENGINEER-IN-CHIEF.—A correspondent urges with much force the propriety of appointing a civil engineer in place of a military officer to superintend the contract works and other civil-engineering duties of this office, which is now vacant.

## A PLAN FOR SUSPENDED DOORS.

THE ordinary method of hanging folding doors with hinges has great inconveniences, for when they are thrown open they appear unsightly, and the loss of the space they take up, in opening and when open, is a great disadvantage. To remedy these defects, various contrivances have from time to time been resorted to; amongst which has been the introduction of sliding or suspended doors.

From the difference of the details, or manner of suspending folding doors, a variety of results have been obtained, some of them not of the most satisfactory kind.

As a practical man, I have had a large amount of experience in suspending doors, and, within the last twelve months, have suspended a door—to represent folding doors—which combines the four qualifications essential to suspended doors:—1st, It prevents the passage of sound and air from dining-room to drawing-room; 2ndly, open or closed, it presents nothing that offends the eye—its appearance is uniform: when open it is invisible, when closed it appears as fixed; 3rdly, it can be taken down, if needed, without removing the pilasters, or injuring anything about it; 4thly, it can be drawn out or pushed back with the greatest ease and steadiness.

The principle of suspending doors is not a new one. I lay claim to no new invention, but to the introduction of some new details, which are found to answer with complete success; and with a desire that others may participate in the benefit, I introduce them to the courteous consideration of the readers of THE BUILDER.

The elevation A represents the suspended door closed, with pilasters on each side, and surmounted by a cornice; B is the plan of the same; C, on plan, is the place into which the door is run when open; *a* is an oak fillet nailed on the floor, to act as a guide for the lower part of the door,—in the bottom edge of which is a groove to receive it, as shown on detail *b*.

Section D shows, at *c*, a panel which is made to take out, in order to unscrew the plate of sheave at *g f*, and take out the door. The moulding and part of the head at *d* is also made to take out,—the piece of quartering above being lifted out by means of a groove mortice at the left-hand corner, and when down keeps the head of jamb in its place, as shown at detail E. The moulding and part of jamb at *e* on plan take down; the quartering behind is fixed, and runs up to the ceiling.

Detail E is a section of brass sheave, iron frame, and bar; F is the elevation of sheave, frame, and corner of door; the plate *g f* is screwed to the top and side edges of door, and is cut in two at *g*, at an angle of 45, in order to take off. There are three sheaves to this door,—one at each corner, the other at the centre of the door. G is the iron bar, which is fixed so as to take out if required.

The section *b* is part of the bottom rail of the door, and shows a groove for the oak fillet *a*, and a fixed iron tongue *h*: this tongue moves in the brass bar *i*, and serves to steady and guide the door, and prevent the passage of air or sound. The brass bar being $\frac{3}{8}$ths of an inch thick stands flush with the carpet, when the carpet is doubled and tacked down on each side of it.

H is a section of *e* on plan.

L represents a grooved and moulded jamb, and moulded edge of door,—so that when the door is put back in its place C, the jambs on each side and head appear alike.

C. R. CARTER.

## INSTITUTION OF CIVIL ENGINEERS.

### ADDRESS OF NEW PRESIDENT.

ON Tuesday, January 8, Mr. William Cubitt in the chair, the proceedings of the evening were commenced by an address from the president, on taking the chair for the first time after his election, in the course of which he noticed some of the principal engineering works which had been terminated, or had made great progress, during the past year, commencing with the tubular bridges across the river Conway and the Menai Straits, which he designated as "pre-eminent for the boldness of the conception, the scientific simplicity of the design, and the difficulty of the execution."

The advantages which must result from the more general use of wrought iron were alluded to, and it was announced that the commission appointed in 1847 for the purpose of examining into the forms and strengths of iron beams in railway structures, had enunciated the opinion, "that any legislative enactments, with respect

to the forms and proportions of the iron structures employed therein, would be highly inexpedient."

The Harbours of Refuge now constructing at Dover, and in the Channel Islands, by Mr. Walker, at Portland and Holyhead by Mr. Rendel, the docks at Leith and Grimsby also by the latter gentleman, the lighthouses at the Bishop's Rock by Mr. Walker, and at the Skerryvore by Mr. Alan Stevenson, were noticed with great commendation, as most important works, admirably designed and executed.

The railway system of the country was then commented on; and it was stated, that there were now nearly 5,500 miles of railway completed in Great Britain, at a cost of 220,000,000*l.*, derived from private sources, and expended within the realm, encouraging, in a remarkable degree, productive industry of all kinds, and inducing a revolution in all mercantile transactions and social relations.

The example of England was noticed, in boldly abandoning the finest roads, and adopting throughout the length and breadth of the land a network of iron ways, over which, by the aid of steam, passengers and merchandise could be conveyed with a velocity which, at its original proposition, was deemed worse than visionary; which, first filling the Continent with amazement, eventually compelled imitation, and thus would ultimately introduce wants, and consequently civilization, to the most remote corners of the world. "If," continued the President, "this be true, we are naturally led to inquire who were the authors of this great revolution? what minds conceived, and what energies executed these vast projects? The reply, gentlemen, must spring spontaneously from you all—the Civil and Mechanical Engineers have been the great actors in this most interesting chapter of the social history of our country."

The junior members of the profession were then addressed as to the opening now offered for the exhibition of their talents, in the various subjects connected with the sanitary question.

## CURRENT ARCHITECTURAL COMPETITIONS.

THE letters we have received during the last fortnight on the subject of current competitions, would nearly fill our present number. To print them is, therefore, out of the question; nor would any advance be made in the reformation of the management of competitions if we did so. They all tell the same story, again and again, of broken faith and insulting offers, which simple exposure has, up to this time, failed to prevent. We would here further observe, that *anomymous* letters conveying personal imputations, cannot receive from us any attention.

*Leicester Union Workhouse Enlargement.*—On this we have a dozen communications. One known architect, not a competitor, or connected with one, says, that great injustice has been done to unsuccessful competitors by the decision come to by the guardians.

"The first of the "instructions to architects" runs thus:—"The workhouse to be enlarged so as to provide day-rooms and dormitories for 1,000 inmates, classified, &c., &c. The board-room, with the two ante-rooms and closet adjoining, and the rooms over, *will not require alteration.*" And the fifth thus:—"It is the wish of the guardians that *as much of the workhouse shall be retained as is possible.*" Yet in the face of these instructions, the guardians, I find, have decided upon adopting a plan for an entirely new building, although they have just paid for two sets of plans, one for an enlargement of the present building, and one for a new building, by another architect. Upon a moderate calculation, seven sheets of drawing-paper, measuring at least 39 inches by 24 inches, would have to be well covered with intricate work in the way of line drawing, tinting, and writing, to illustrate a design in accordance with the instructions, to say nothing of the folios of specification and estimates necessary to explain these seven sheets of laborious drawings; and ten out of the eleven sets of drawings sent in are thrown back upon their authors' hands, not, forsooth, because the alterations and additions are not cleverly devised, but because the guardians choose to nullify their printed and issued resolutions by adopting a plan in no way in accordance with them."

Another says, "I take for granted that there cannot be two opinions on the conduct of the Board of Guardians, who, after inviting architects to furnish plans in competition for alterations and additions to the present workhouse, allow a plan for an entirely new building to be sent in by a favoured townsman, and adopt that in the face of the instructions to architects, the terms upon which the competition was entered into, and according to which the merits of the plans ought to have been judged."

*Birmingham Institution for the Blind.*—Advertisement was for elevation only,—30*l.* for first, 10*l.* for second. "One of the 32," who have sent in, asserts that the plans were first obtained by specious suggestions to one who applied early for instructions, that if he sent in plans (which he did), competition would probably be avoided.

*Assembly-Room, Newbury.*—Ten pounds are offered for plans and *specifications* of an assembly-room, not to exceed cost of 1,000*l.*,—or not half what ought to be paid for them, if ordered without risk of rejection. A correspondent complains that when he wrote for information and instructions of what was actually wanted, reply was, "I have none to send you!"

*Independents' Chapel, Gloucester.*—About forty plans were sent in by twenty-nine architects. Design selected is by Mr. Medland, of that city. Concerning this, too, we have complaints, but they are anonymous.

*St. Thomas's Church, Newport.*—The last we heard of this was, that the selection rested between Mr. Johnson and Mr. Daukes; Mr. Stratton, townsman, third; and that Mr. Withers *would* have been fourth but that the supporters of his design came too late. Correspondents state that the "Committee ordered the number of plans to be reduced *by the subscribers* (each donor of 5*l.* having a vote) to six, from which one is to be selected by a London architect of celebrity."

## BRISTOL AND WEST OF ENGLAND ARCHITECTURAL SOCIETY.

IN your paper of January 5th, I observe a communication from "B.," in which he states that a church, in which many important features are copied from "Brandon's Analysis," has been erected under the auspices of a society which has constituted itself the *arbiter* of the ecclesiastical architecture of the "far west." I presume he alludes to St. Jude's, the last church which was consecrated. I feel bound, therefore, to correct him in his error, which he has so broadly stated, and to assure you that not a single drawing of the above church was laid before the Architectural Society, nor has there been any communication with the society about it, nor have I myself ever seen a drawing or a single stone of it.

What the society did do was to recommend that a different set of plans should be adopted from those which were at first drawn, and that the Middle Pointed, and not the Third Pointed style should be employed: but the plans so altered were never laid before the society.

So much for "B.'s" *facts*.

But I think I may be allowed to add, that he seems also to have mistaken the province of an architectural society. The great point which this society aims at is to secure a correct ritual arrangement of the church; and being satisfied that there are no anachronisms or anomalies in the style, &c., of the plans submitted, it is very careful not to interfere with those parts which are merely matters of taste, and which must needs vary according to the talent of the respective architects.

Were the society to alter every window, door-case, moulding, &c., according to its own taste, architects would be mere draughtsmen in their hands; and I think you will agree with me that they would become more servile copyists by this means than by any other; and further, a gross injustice would be done to architects of talent and experience, by putting all men on the same level.

I believe that any architect who has laid plans before this society would bear me out in stating that, while we are most unflinching in the condemnation of what is *incorrect*, we are most careful to maintain the independence and freedom of the architect in matters which are arbitrary. ECCLES. J. CARTER, Hon. Sec.

## GREAT SUSPENSON BRIDGE IN RUSSIA.

CONSIDERABLE interest has been excited in St. Petersburgh by the model of a suspension bridge across the river Dnieper, at Kieff, one of the principal cities of Russia,—mentioned by us before it was sent from London. Mr. Vignoles is the engineer, from whose designs, and under whose immediate directions, this bridge is now constructing. It has four principal openings, each of 440 feet, and two side openings of 225 feet each, and also a passage of 50 feet on the right shore, spanned by a swivel bridge, opening for the passage of the steamboats and other river craft. The ways through the piers have a clear breadth of 28 feet, and a height of 35 feet to the soffit of the semicircular arches. The platform has nearly 53 feet of extreme breadth, of which 35 feet are exclusively devoted to the carriage-way; the platform is suspended by chains, all on the same horizontal plane, two on each side of the road; the footpaths project beyond the chains, and are carried by cantilevers round the piers exteriorly, so that the foot passengers are completely separated from the horsemen and carriages. The chains are composed of links 12 feet long, and each weighing about 4 cwt.; eight links form the breadth of each chain, and the total length measured along their curves is about four English miles. For the swivel-bridge the iron employed is almost exclusively malleable; the breadth of the platform is nearly 53 feet, and the weight of iron employed scarcely exceeds 100 tons. The bridge is moved horizontally (on the same principle that locomotive engines are sent round on the large turntables at a railway station), and by the efforts of four men only, acting on a very simple apparatus.

The total weight of iron used in the construction of the bridge is about 3,300 tons, including the machinery employed in the various stages of its construction. The whole was made in England. A regular commissariat is attached to the establishment, and the whole organization of service is very complete. Not the least remarkable part of the establishment is that for the manufacture of the hydraulic cement required for the foundations and masonry. It is, in fact, an artificial Pozzolano, made from a peculiar clay found in the Kieff hills, and prepared on the principles laid down by Vicat. The buildings for this purpose are very extensive. Eight large roasting ovens, besides numerous grinding-mills, are in constant action; the quantity manufactured is upwards of 300 bushels (or about 500 cubic feet) in every twenty-four hours. The cost of the bridge, exclusive of the approaches, will be upwards of 420,000*l.*

## DIRECTORIES.

*The Official and Legal Directory for* 1850.—This is a very handsome volume, perhaps handsomer than necessary, considering it is to last but a year, comprising, with a "Diary," an official, legal, parliamentary, banking, and insurance directory. For the diary, half a large octavo page of writing paper is appropriated to each day. The Directory is capitally printed by Vizetelly and Co., by whom also it is published.*

*Who's Who in* 1850, is a smaller Directory, published by Baily, Brothers,† referring only to persons of station, and scarcely going so far as its clever title would lead to the anticipation of.

*The Post Magazine Almanac and Court and Parliamentary Register* (a good six-pen'orth) gives a considerable amount of information on the subject of insurance offices.

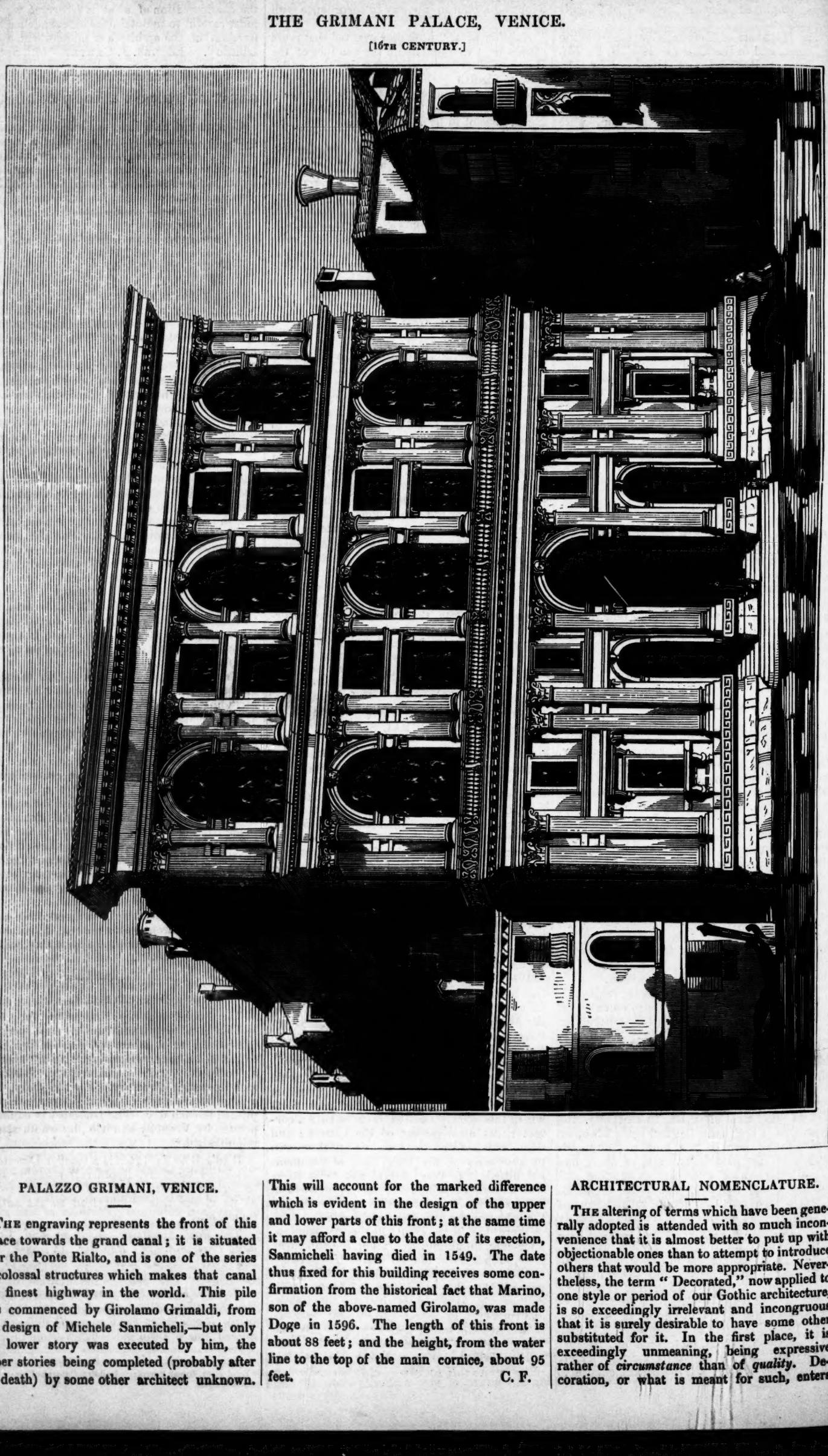
*Bogue's Pocket Diary and Calendar.* has a line for the engagement of the day, and two blank leaves after each monthly division for memoranda unconnected with dates.

* Peterborough-court, Fleet-street.

† Royal Exchange-buildings, Cornhill.

## THE GRIMANI PALACE, VENICE.

[16TH CENTURY.]



### PALAZZO GRIMANI, VENICE.

THE engraving represents the front of this palace towards the grand canal; it is situated near the Ponte Rialto, and is one of the series of colossal structures which makes that canal the finest highway in the world. This pile was commenced by Girolamo Grimaldi, from the design of Michele Sanmicheli,—but only the lower story was executed by him, the upper stories being completed (probably after his death) by some other architect unknown. This will account for the marked difference which is evident in the design of the upper and lower parts of this front; at the same time it may afford a clue to the date of its erection, Sanmicheli having died in 1549. The date thus fixed for this building receives some confirmation from the historical fact that Marino, son of the above-named Girolamo, was made Doge in 1596. The length of this front is about 88 feet; and the height, from the water line to the top of the main cornice, about 95 feet.

C. F.

### ARCHITECTURAL NOMENCLATURE.

THE altering of terms which have been generally adopted is attended with so much inconvenience that it is almost better to put up with objectionable ones than to attempt to introduce others that would be more appropriate. Nevertheless, the term "Decorated," now applied to one style or period of our Gothic architecture, is so exceedingly irrelevant and incongruous that it is surely desirable to have some other substituted for it. In the first place, it is exceedingly unmeaning, being expressive rather of *circumstance* than of *quality*. Decoration, or what is meant for such, enters

into every style of architecture; therefore, to call any one particular style "Decorated," and more especially when many examples of it are more remarkable for plainness than ornamentation, partakes of absurdity. We may apply the epithet "Decorated" to a building but not to a style; the suitable name for it is not *decorated*, but DECORATIVE, since that would be far more in accordance with the analogy of language. If the term Decorated is to be bestowed by way of pre-eminence on any one distinct mode of Gothic, that which we call "Perpendicular" has surely the greatest claim to it; and, in fact, the latter is sometimes called Florid Gothic. The term "Perpendicular" itself is not a very satisfactory one, still it is far less objectionable than that of "Decorated;" because it does really express one marked characteristic of the mode to which it is applied.

Analogy is not at all attended to in the names at present employed for the three leading divisions or classes of our national Gothic. For, if we call the first of them "Early English," without extending the epithet expressive of nationality to the two other styles, the "Early" alone would be quite sufficient. Surely, then, it would be in every respect better, as we call the first of the three periods into which Gothic is divided, "Early English," to distinguish next as "Middle English," or our second style of "Gothic;" and the third, as "Late English," or perpendicular English; in like manner as French antiquaries divide their *Style Ogival* into *primitif*, *secondaire*, and *tertiaire*. While such change of names would be an exceedingly slight one, it would be attended with positive convenience by getting rid of a misnomer, which is now a stumbling-block to the uninitiated, and perplexes even those who know what is meant by it. Not a little puzzling is it to persons in general to be told that what, perhaps, looks to them a very plain building, is in the "Decorated" style, and that such profusely adorned piles as Henry the Seventh's chapel, and the new palace of Westminster are *not*. They cannot make it out at all, and no wonder; for it is like telling them that black is white and white is black.

ZETA.

## RAILWAY JOTTINGS.

THE Newport station for the South Wales line has just been commenced at the High-street. Messrs. Hughes and Co., builders of the stations on the Chester and Holyhead line, have taken the contract for erecting the Newport, Cardiff, Cowbridge, and Swansea stations.——The "calls" payable during January, 1850, so far as advertised, amount to 1,734,279*l.* against 3,926,342*l.* in 1849; 4,860,220*l.* in 1848; and 6,157,863*l.* in 1847. The total calls during the year amount to about 20,000,000*l.*, of which 18,000,000*l.* are for English, Irish, and Scotch, and 2,000,000*l.* for foreign, subscribed for in England. The calls in 1848 were 33,000,000*l.*; in 1847, 42,000,000*l.* Vast as such sums of money are, however, any one of them constitutes but a trifle in comparison with the whole amount expended on 5,950 miles of railway, old and new, already formed, namely, almost two hundred millions sterling (more precisely in fact, 197,000,000*l.*). The average cost per mile has been 33,110*l.* From some interesting calculations in the *Times*, it appears that this average cost has varied considerably, and that it has by no means been on the decrease latterly. In 1842 the cost of the railways in operation averaged 34,690*l.* per mile; in 1843, 36,360*l.*; in 1844, 35,670*l.*; in 1845, 35,070*l.*; in 1846, 31,860*l.*; in 1847, 31,700*l.* in 1848, 34,234*l.*; and, in 1849, 35,214*l.* The amount of gross traffic receipts on all this truly "valuable property," is another interesting point in the general statistics of the railway kingdom. In the British *imperium in imperio* alone, the annual revenue thus derived from her Majesty's lieges amounted, in the year just closed, in all, to eleven million, six hundred and eighty-three thousand, eight hundred pounds sterling!—reaped in return for the certainly noble privilege of flying to and fro, with winged speed, over all the length and breadth of the land, interlaced by five thousand nine hundred and fifty miles of hill-levelled, valley-filled, and straight and narrow way across flood, and through mountain, and over abyss.——A correspondent of a metropolitan paper, in speaking of the supply of milk by rail to London, with a gravity and wisdom worthy of that ingenious "writer and decorative painter," who invented "painted tablets and numbers," for the especial use of railway companies, "with extraordinary tact, so as to give great energy to this present enterprising and inventive crisis,"—triumphantly asks the blind plodders who may happen to peruse the prologue to his project—"Why should not the railway Companies lay down pipes from the adjacent highland grazing districts, Harrow, Brentwood, Richmond, &c., where the height is favourable, and allow the milk fresh from the dairies to flow by gravity from cisterns, eligibly placed for collecting the milk from the various farmers, and be drawn off at the metropolitan termini for retail supply?"

## NOTES IN THE PROVINCES.

MR. H. ROGERS, of Wolverhampton, has offered 2,000*l.* towards the endowment of a church on Wednesfield Heath, and the late patron, Mr. J. M. Paget, has given a site for church, parsonage, and schools. Close by, Mr. Rogers is already building a row of almshouses.——At Ryde, where gas is charged 10s. per 1,000 cubic feet, besides 6s. a-year on meter said to cost but 35s., a movement is being originated, on an example set at Fareham, for the attainment of some redress in shape of a reduction in price.——It is intended, we hear, to take down and rebuild Wimborne Minster chancel.——A site for new schools for Wicker parish, Sheffield, has been purchased for 1,200*l.* The buildings are to cost 1,300*l.* more, and to accommodate 600 children. 1,600*l.* are already raised. It is also intended to build a new hotel at Sheffield, at a probable cost of 10,000*l.* A committee has been appointed to obtain plans and estimates, obtain a site, &c. In the same town, according to the local *Times*, preparations have been made for the erection of a new post-office fronting the market-place. Messrs. Weightman and Hadfield are the architects, and the contractor is Mr. William Clareborough, builder, Portobello.——The additional dock at West Hartlepool has been contracted for by Mr. Hutchison.——The opening meeting of the Chester Architectural Society was held on Monday week, the Bishop of the diocese in the chair. ——On Tuesday week the first stone of St. Mary's Church, Gomersal, was laid, with the customary ceremonial.——There are in prosperous operation in Edinburgh three model lodging-houses (one of which is solely for females), having altogether 63 bedrooms, 124 beds, and accommodation for 219 lodgers. They have been quite free from fever and contagious diseases.——It has been resolved to raise, by small subscriptions, a sum (3,000*l.* according to a Dublin correspondent of the *Athenæum*) to be devoted to the restoration of the great south wall of the nave, and east wall of the choir of St. Patrick's Cathedral.

## COVENT GARDEN CHURCHYARD.

### PROTECTION OF GRAVES.

Your correspondent, "Joseph Rutherford," asks, "Whether there is any protection afforded for the remains of those buried in consecrated ground?" He does not state that the remains of his family, who have been buried in the Covent Garden Churchyard, have been disturbed, nor that gravestones were erected to their memory; but, assuming that such is the case, I will shortly state what the law is when gravestones or other monuments erected to the memory of the dead are removed, without the sanction of some Act of Parliament or of the family of the deceased.

During the lifetime of the person who erected the gravestone, he may sue those who removed it in an action. After the death of that person, the tombstone is like an heir-loom, and descends to the heir of the corpse buried under it, who may, in like manner, bring an action for the removal of the monument of his deceased ancestor. (See "Corven's" case, 12 Rep. 105, Co. Lit. 18, b.; "Spooner *v.* Brewster," 3 Bing. 136.) I am not aware of any authority showing that the actual remains of the dead, so long as they can be traced, are the property of the heir; but where the remains are identified by a tombstone, no one can interfere with that monument, so long as an heir remains, without incurring the same consequences as would follow from his unlawful interference with your correspondent's property or person. And as the remains of the dead can seldom be disturbed without at the same time disturbing the headstone which marks their resting-place, the law does in this instance afford some remedy for the insult of which he naturally complains.

A SPECIAL PLEADER.

Temple.

## EXCAVATORS' ESTIMATES.

THE following tenders for excavating and other works on an estate north side of Grove-road, Upper Holloway, will interest some of your readers. The works to be done are:—

Digging from excavations, and carting same, to form new roads and pathways, 5,500 cubic yards.

New roads and pathways to be formed 40 feet in width, and raised to an average height of 18 inches above present surface, 2,460 feet run.

New roads and pathways to be formed upon site of new excavation, the top of pathways to be raised 10 inches above the same, 2,050 feet run.

Fencing, implements, lighting, watching, notices, filling in ditches, excavations, &c., 103*l.* 10s.

| | | | |
|---|---|---|---|
| Skitterall | £531 | 14 | 0 |
| Brown and Son | 349 | 12 | 11 |
| Hilton | 280 | 0 | 0 |
| Green | 260 | 0 | 0 |
| Reddin | 234 | 0 | 0 |
| Jarvis | 231 | 5 | 0 |
| Whiteman | 228 | 6 | 8 |
| Beck | 215 | 15 | 7 |
| Perkins | 206 | 0 | 0 |
| Sinnott | 198 | 0 | 0 |
| Prat | 196 | 0 | 0 |
| Drummond | 187 | 0 | 0 |
| Yeoman | 177 | 0 | 0 |
| Salter | 172 | 10 | 0 |
| Kendle and Smith | 139 | 0 | 0 |
| Smith and Kendle | 126 | 0 | 0 |
| Gregson | 115 | 0 | 0 |
| Bake and Brown | 105 | 0 | 0 |
| Payne (accepted) | 103 | 10 | 0 |

Difference between the highest and lowest (only) 428*l.*!

J.

## A THEORY OF DWELLINGS.

THE following "theory of dwellings," from a clever article on "Human Progress," in the late number of the *Westminster Review*, is very suggestive, and is in a road we have often trodden.*

"Shelter from the 'skyey influences' is the first consideration—in other words—a roof; a huge umbrella-covering, on walls inclosing a sufficiently large space, and this space should be gravel soil—the soil nature has provided for man to dwell on, and not for vegetables to thrive on, other than those that gladden the sight of man. The materials for constructing a roof were 'some time a problem, but now the time gives them proof,' since Robert Peel abolished the duty on glass, and set man's brain free to work on nature's materials, before reserved as a costly luxury for the wealthy. Four external walls, then, of sufficient height and thickness, and constructed with large hollow bricks, should be covered in with a roof of rough-surfaced glass, of greenish tinge, and of sufficient thickness to defy the hailstone. The roof structure should be of wrought-iron, on the tension principle, and divided into as many spaces as may be desirable, supported on stone or cast-iron columns. Portions of the glass might be left bright, for the sun's rays to enter; other portions coloured, for artistic effect. The glass should be inserted in the roof in large sheets, with elastic packing round the edges. The greater the number of the floors there can be, the better, as height above the earth's surface is always favourable to health, rising above the vapour exhalation line. But, of course, there must be a certain propor-

* The new number of the *Review* contains an article on "Epidemics," and one on "Railway Progress," deserving consideration.

tion of width to height. If we assume six ranges of apartments eight feet high each—supposed for working men and families, then the area within the internal walls should not be less than one hundred feet. The floors should be double, of sawn slate, with air spaces between, and supported on iron girders. The partitions and staircases also should be of sawn slate. The apartments should all be against the external walls, with the windows opening outwards, and the doors opening on inner galleries. The ground-floor rooms should be apportioned to a dining and coffee-room, a library and lecture-room, and a kitchen. The central portion, to the height of the first floor, should be covered in with glass pavement, and applied to hot and cold baths, and wash-houses, —the cellars beneath, to the stowage of provisions and fuel. The upper story should be the nursery for children, and the school-rooms. The intermediate ranges of apartments would be sitting-rooms and bed-rooms. On the north side of the building, external to the kitchen, should be a building containing a steam-engine and well, and small gas-works, with a lofty chimney running above it close to the external wall. The waste heat from the gas-works would serve to heat economically the engine boiler, and to prepare heated air to warm the building generally in the galleries and halls, and particularly in the private rooms, being in the hollows of the floors at all times, and admitted into, or excluded from the apartments, at the pleasure of the inhabitants. Each bed-room and sitting-room would be provided with a closet, dust-shoot, and sink; and some of them would be arranged to throw three or four or more apartments in groups at pleasure. The use of the engine would be, to grind and chop for the kitchen, to clean boots and shoes with circular brushes on a shaft, to clean knives and forks by the same process, to pump up hot and cold water into all the apartments, to furnish steam for the drying-closets and cooking, and cleansing earthenware and utensils, and keep going a rising and falling lift to the upper stories, to save the labour of mounting stairs. Westward and southward of the building should be laid out a garden and pleasure-ground, kept cultivated by the manure and refuse, chemically treated, to neutralize the gases. The garden would furnish plants to place in the interior of the building, to consume any vitiated air that might escape the ventilating processes. Open fire-places might be placed in the apartments of the ground floor, and gas stoves in the others.

These arrangements would suit the solitary as well as the gregariously disposed. The gas and hot water arrangements would serve for all the processes of private cookery, and the public kitchen would supply food for single men or families, to whom household drudgery were a nuisance.

The furniture should be chiefly metallic, to prevent risk of fire, and of forms simple, yet graceful. The beds should be spring mattrasses or water beds. It is not generally understood that the object of a soft bed is chiefly to *fit* the body, to prevent undue strain on any portion of the bones or muscles. Feather beds do not well attain this object, because the feathers not being pliant or moveable, are consequently compressed. The water bed obviates this, and produces equal pressure. Could the body be laid in a plaster cast exactly fitting it, there would be no sensation of hardness. Plaster casts and prints, multiplied by mechanical art, should abound. The large halls, and dining and lecture-rooms, might be furnished with statues and paintings, if they could be afforded. But all should wear a severe simplicity, though the eye should never rest on an ugly or ungraceful object.

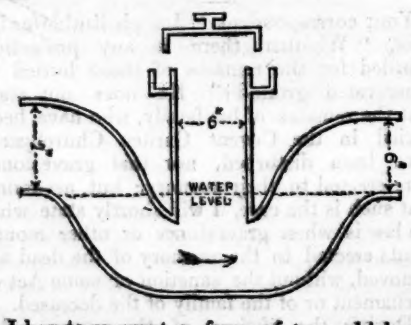
It may be objected that this mode of living would not suit the tastes of English people, who consider "every man's house his castle," and prefer model cottages to model lodging-houses. This idea, we believe, has chiefly arisen from the distaste consequent on inconvenient and miserable lodging-houses. But there is no reason why this system should not combine all the advantages of the clubs with all the privacy of domestic life, free from its drudgery. It is certain that, upon this system, the maximum of comfort, with the minimum of labour, may be realized; and it is only by the congregation of individuals that high civilization can be attained. Let us consider the advantages.

First, the most thorough and absolute independence of all personal attendance. In such a dwelling a man might conveniently obtain all that he would require for personal use, as simply as he could buy goods in a shop. There could be no dirt, with hard slate surfaces for floors and walls. His hot and cold water, and gas, all arranged to his hand, and with the means of getting rid of waste water,—with couch and furniture so simple as almost to be self-arranging,—and with ready access to food at any time he might require it,—he would need no personal attendance, save in case of illness. He might go in and out at his own pleasure, without trouble to himself or others. Advantageous as all this would be to individual men, infinitely greater would be the advantages to families. A large assemblage of people could maintain their own physician on the establishment,—could engage their own lecturers and school teachers,—could have a public nursery, —could tend the sick,—could have their own gymnastic grounds,—in short, all the appliances which are now the exclusive privileges of the wealthy. In such an establishment the natural aptitudes of children would be developed profitably to the community; and painful misfits, rendering so many intelligent persons a nuisance to their friends and the community, would be avoided. Social intercourse would be attainable without its present disadvantages, and the members of such a community would grow up attached to each other."

## ACCESS TO DRAIN TRAPS.

The attention that has recently been given to the best mode and materials for forming drains, has led to a very extended use of the 6-inch glazed stone-ware pipes, than which nothing appears better adapted for the purpose, as combining efficiency with economy. In the application of these pipes as house drains in connection with the public sewers, it becomes necessary to adopt some form of trapping, to prevent the foul air of the sewers being conveyed into the houses, as well as the passage of rats in the same direction. There are now two or three modes in use for this purpose.

The old form of brick cesspool with a dip-stone is expensive, occupies much space, and is troublesome to cleanse when choked up. A pipe of stoneware, curved downwards, sufficient to trap the passage, is economical and efficient so long as the way keeps clear, but when gritty or other heavy matter fills up the bend, it becomes necessary to take up probably a considerable length of pipes, beginning at one end, in order to clear the obstruction. It has been attempted to meet these objections by a form of pipe now much in use for the end-pipe at the out-fall to the sewer, the extreme end forming an oblique angle, with a disc of iron suspended from above, so as to close the pipe, unless forced open by the pressure of fluid in its course to the sewer. This arrangement is simple enough; but should fragments of paper, sticks, or other matter lodge on the edge of the pipe or disc, the closing is incomplete, and foul air will pass.




I beg to suggest a form of trap which will meet all requirements. The accompanying diagram shows a section. It should be made of stoneware, as are the pipes, and it may be socketed to them in any part of their course where most convenient of access, for opening the cover when requiring to be cleared of deposit. The lid for closing the opening through which the trap may be cleansed is here shown raised from its seat; the socket, or groove into which it drops, should be filled with sand, putty, or other suitable material for preventing the escape of air, so that it may be easily removed and readily renewed.

If a small flap or trap-door be formed in the part of the flooring covering the drain, immediately over the lid of the drain-trap, ready access may be obtained to the trap for periodical examination of its efficiency, and cleansing, if necessary. J. L.

## Miscellanea.

The Church at King's Worthy, near Winchester, was re-opened for divine service on the Sunday before last, after being closed for some time for the purpose of enlargement and repairs. A new aisle has been added on the south of the nave, the whitewash has been scraped off the walls, the whole of the huge, unsightly pewing has been replaced with lower pewing, the windows re-glazed (the east one with stained glass), the stonework restored and cleaned, the large unsightly gallery which projected far into the church has been removed, thereby disclosing the tower arch and window. The font has been removed from the east-end of the nave to the west, and the pulpit has been re-constructed. The whole of the roofs have been re-tiled, the north wall has been rebuilt, and two new windows inserted. On pulling down the old north wall of the nave, which was several inches out of the perpendicular, the workmen disclosed a large recess at the east end (the north-east angle of the nave), reducing the wall in that part to a few inches in thickness, fully acccounting for the expansion of the chancel arch, and it appeared that this recess had once contained the staircase to the rood-loft. Mr. John Colson was the architect, and Mr. Vokes the builder employed.

Exhibition of the Works of Industry of all Nations.—Her Majesty has appointed Prince Albert, the Duke of Buccleuch, Earl of Rosse, Earl Granville, Earl of Ellesmere, Lord Stanley, Lord John Russell, Sir Robert Peel, Mr. Henry Labouchere, Mr. Gladstone, the Chairman of the Court of Directors of the East-India Company for the time being, Sir Richard Westmacott, the President of the Geological Society for the time being, Mr. Thomas Baring, Mr. C. Barry, Mr. Thomas Bazley, Mr. Richard Cobden, the President of the Institution of Civil Engineers for the time being, Mr. Eastlake, Mr. T. F. Gibson, Mr. John Gott, Mr. Samuel Jones Loyd, Mr. Philip Pusey, and Mr. William Thompson, "to make full and diligent inquiry,—into the best mode by which the production of our colonies and of foreign countries may be introduced into our kingdom; as respects the most suitable site for the said exhibition; the general conduct of the said exhibition; and also into the best mode of determining the nature of the prizes, and of securing the most impartial distribution of them." Mr. John Scott Russell and Mr. Stafford Northcote to be joint secretaries. Mr. Henry Cole, Mr. C. W. Dilke, Mr. G. Drew, Mr. F. Fuller, and Mr. Robert Stephenson to be the executive committee; and Mr. Digby Wyatt their secretary. — It appears strange that the president of the *Institute of Architects*, for the time being, is not in the list as well as the president of the Institution of Engineers.

Somerset Archæological Society. —The first quarterly general meeting of this society, was held on 2nd inst., when the Rev. F. B. Portman, who was in the chair, delivered an opening address to the members. Papers were then read on the study of natural history, by the Rev. W. R. Crotch, Dr. Woodforde, Mr. W. D. Crotch, and Rev. C. P. Parish. At the evening meeting also, papers were read,—by the Rev. F. Warre, on the British Town, at Norton Fitzwarren; by Mr. R. Walter, on the Roman remains at Combe St. Nicholas; and by Mr. C. E. Giles, on Norman architecture.

Gutta Percha in Floors.—I observed in your publication a suggestion that gaping floors of rooms might be well filled up with gutta percha. Is not this material, however, of a highly inflammable nature, and might not that property render its use in the manner suggested rather inconvenient?—X. Y. Z.

*** Gutta percha, when inflamed, burns like a pitchy resinous wood, and would certainly not conduce to make a house fire-proof.

The Iron Trade in Scotland and Abroad.—Messrs. Ferguson and Rhind's annual circular shows that, as compared with 1848, the product and stock of pig-iron in Scotland are 92,000 and 95,000 tons respectively n excess, while the entire shipments are 14,858 tons less, being 153,183 tons to foreign ports, and 221,943 tons coastwise in 1849, against 162,151 tons foreign, and 227,833 tons coastwise in 1848; and present the fact that, notwithstanding the extreme depression in the iron trade generally, and the falling off in shipments and diminished consumption for malleable iron purposes in Scotland this year, the increase of stock has been little more than commensurate with the extra production since 31st December, 1848. It therefore follows, say they, that our local and interior requirements must have improved to the extent of the above decrease in the items of shipments and malleable iron. Last week, they observe, business [in pig iron] was more active, and the current value had advanced to 47s. to 47s. 6d. mixed nos.: and 48s. No. 1, prompt cash, f.o.b., with 1s. to 1s. 6d. extra on three months open contracts. A steady, though not active business, has been transacted in manufactured iron, which has ruled between 5*l.* 10s. and 6*l.* 10s. for merchant bars. The year 1850 promises to be a prosperous one to the iron and forgemasters of Liege, Charleroi, Seraing, Verviers, &c., and to the zinc establishments of the Grande Montagne, &c. The reduction on the import duties on Belgian iron, zinc, coals, &c., into France, will cause activity, not only in the working in every branch, but also to the railway transit.

Murray's Compensating Ball Lever.—The object of the invention registered by Mr. Murray is to obviate the inconveniences attending the old ball taps in cisterns, such as occasionally finding no water in the cistern, perhaps when they most want it; and, again, occasionally too great a supply when the ball remains down; and if the cistern is in the upper part of the house, the ceilings and carpets are spoiled. It consists of a ball divided into two chambers, one above the other. The top chamber is air-tight, to act as a permanent float; the lower has a small opening close under the division, for the admission of water or air, either to form a weight or a float. Thus, when the ball is up, and the supply shut off, the lower chamber will be full of water to exert the power of a weight equal to 3 lbs. (in the case of a ball 6 inches diameter) on the end of the lever to turn on the service, being 2 lbs. more than the ordinary ball would have; then suppose the water-level in the cistern to fall below the ball when in a vertical position, the water would run out, and it would regain the whole buoyancy of an ordinary ball of that size.

Aylesbury Parish Church.—The inhabitants of Aylesbury have commenced the repairs of the ancient parish church of that town. The church is an ancient cruciform structure, in the Decorated style of architecture, with some earlier portions, and a low central tower. The western entrance is very rich, and on the north side of the chancel is a chantry chapel formerly used as a vestry room, in which are still remaining some traces of Norman character. The door of this chapel is very ancient, opening by means of a latch key in the centre, which turns a strong iron bar that drops into two staples. It was opened by means of a hole hewn in the door, sufficiently large to admit of an arm; the sacramental plate and wine were kept in this small room, and in all probability were pillaged by the Parliamentary forces when stationed in Aylesbury. A lancet arch door, with dog tooth carving, has been brought to light by the good taste of the respected vicar, the Rev. John Prettyman. Most of the pillars of the south aisle have declined from the perpendicular, although the arches above them are in no way disturbed, with the exception of the eastern arch, which helps to support the tower. It is decided to prop up the tower and introduce new columns. The architect employed is Mr. Scott.—J. D. K.

Niagara Suspension Bridge.—The present structure rests on wooden towers 50 feet high, over which pass 14 cables,—5 of 36 wires each,—5 of 72,—1 of 125,—and 3 of 150: in all 1,115 wires, capable of bearing nearly 1,000 tons weight. A railway structure to supersede it is spoken of.

Chantrey on the Nelson Column.—Chantrey, according to Mr. George Jones's "Recollections of his Life," was often requested to recommend able artificers; and in such cases he made his friends' interest his own. "He was always consulted by the heads of the Government on the propriety of public testimonials; among others he was desired to send his opinion as to the propriety of erecting a column, with a statue on the top, to the memory of Lord Nelson; he seriously and reasonably objected to a column, for a column ought to be part of a building, or if it be used as a monument, it should be treated as a biographical volume, with the acts of a hero sculptured on the shaft of the pillar on the capital of which he stands, similar to those of Trajan and Antoninus. Chantrey also wished to see the useful united with the commemorative, and would have preferred an architectural edifice, adapted to accommodate (with dwellings rent-free) the veteran officers of the navy, and the site adorned by a fine statue of Nelson, forming altogether a memorial worthy of the hero, and indicative of the gratitude, generosity, and benevolence of the nation."

The Small-Pox and Vaccination Hospital, at Highgate-hill, which we illustrated fully some time since, is now nearly ready for occupation. Various alterations were made in the original design; the frontage was lessened 70 feet, and brought to 218 feet, and the height was lowered 2 feet. The balustrade in front is omitted, and the ventilation shaft postponed. The whole cost, including a lodge, and laying out the ground, we are told, will, nevertheless, be about 20,000*l.* The accommodation provided is for 70 patients. The acute wards, on the one-pair floor, are very spacious apartments with windows at back, over the corridor, as well as in front, for thorough ventilation. The walls of these are rendered with Parian cement. The elevation is plain and unpretending in execution (more so than our drawing gave the notion of); it is faced with stock bricks, and has Bath stone dressings; the porch is of Portland stone. The hall is laid with Orsi and Armani's metallic lava, in an ornamental pattern, and the lower corridor with the same material of one colour.

View of Maidstone Church as proposed to be Restored.—A lithograph of the interior of the Collegiate Church of All Saints at Maidstone "restored to the date of its completion," has been published by Mr. J. Whichcord, jun., architect. It includes the rood screen polychromed "and the rood." The screen is continued round one of the bays of the north aisle to communicate with the rood staircase, which still exists. This screen probably enclosed the chapel of St. Mary (of which mention is made in old documents), and there exists a niche, which formerly it is said, held her image. The pulpit is placed on the north side. When we last saw Maidstone Church, it was in a miserable plight, and we shall gladly hear of endeavours to obtain a proper restoration of it. If Mr. Whichcord's drawing is published with the view of leading to this, he was unwise to put in the "rood," as it is calculated to increase the opposition of that portion of the community who connect the restoration of churches with the restoration of popery. Maidstone Church and College were commenced by William Courtney, Archbishop of Canterbury, in 1395, on the site of an old hospital founded there in 1260. The style is Perpendicular.

The Thoroughfare, Fenchurch-street.—A correspondent draws our attention to the delay there is in effecting the long-contemplated opening through the tower of St. Benet's Church, at the south-west corner of Fenchurch-street, London, and which would enable the authorities to throw part of the present paths into the road and so improve the thoroughfare. At a recent vestry of the united parishes of St. Benet and St. Leonard, Eastcheap, we understand Mr. l'Anson's design for this undertaking was submitted and approved, and it was decided, that so soon as the necessary arrangements were completed, the work should be proceeded with.

Olympic Theatre.—In Mrs. Mowatt's excellent comedy "Fashion," produced here on Wednesday last, with considerable success, there is a scene displaying a conservatory, which is very cleverly managed.

Projected Works.—Advertisements have been issued for tenders by 15th inst., for 100 sets of wrought-iron wheels and axles for the Great Northern Railway Company; by 1st February, for additions and restorations to St. Margaret's Church, Canterbury; by same date, for the works of Wolverhampton Exchange; by same date, for the erection of the new church of St. Gregory, Canterbury; by 11th February, for the erection of the Training Institution for Females at Derby; by 16th inst., for the erection of a building in the poorhouse-yard, Southampton; by 4th February, for about 3,000 tons rolled rails at the port of Lubeck; and by a date not specified, for the erection of a cottage, barn, stable, and other farming conveniences, at Mashwood, Droitwich.

Gas Explosion.—At Bath-street, Glasgow, from the supposed subsidence of a street vault and consequent fracture of a pipe, leading, we presume, to a street lamp, the vault was filled with gas, and a candle being carelessly carried into it, notwithstanding the full and timeous warning which the gas itself had previously given throughout the neighbourhood, an explosion took place, and two men were dangerously injured, and several houses damaged. It is strange that, notwithstanding our long experience of the nature as well as the utility of gas, so many still tamper with it as no child of the least experience would with that equally useful and obedient servant, but most dangerous master—the fire. It is earnestly to be hoped that we are now, as a nation, rapidly outgrowing this childish inadvertence,—that the nature and properties of gas will soon be as universally known and heeded as are those of the fuel out of which it springs,—and that the time is close at hand when even the poorest and most ignorant of the people would as soon be without the fire that cooks their food as the light that is so well adapted to illuminate and cheer their dwellings.

The Mud Hills in the Clapham-road.—As your valuable journal is an advocate for order relating to buildings, and as roads and streets are so intimately connected therewith, I wish to draw the attention of the public to the very disgraceful practice of collecting the mud, and loading the footpaths of such roads as the Clapham, Brixton, and many others in that locality, with the scraping of those roads, and there leaving it sometimes for a week, or longer time, and sometimes two crops heaped one over the other, as at the present time. The said mud (instead of being carted away to some proper place the moment it is scraped to the side of the road, as in London streets) is deposited on the footpath until a customer may happen to require any for building purposes. So that, in fact, the said road is nothing more or less than a *road-sand grinding establishment*, and the depôt on *the public footpath*, where it is placed for sale, and if the sale should be slack, which it is at this season of the year, the footway is encumbered to a scandalous degree, so much so, that the mud heaps are 4 feet wide, or more; and these are thickly interspersed with large gravel heaps, very unsightly, and also very dangerous in a dark night, as a person has no right to expect to come in contact with either a heap of mud or gravel, on a regular footpath. Men are daily employed scraping away at the roads; but the footpaths are seldom or ever repaired; and when they are, they are never done properly—that is, gravelled and made with a proper incline for the water to run off; but we often see them made as flat as a table. This reminds me of Trafalgar-square, which, in wet weather, is a regular pond. Is it not surprising that they cannot lay a pavement proper for the water to flow off, simple as it is.—R. M.

Electro-Telegraphic Progress.—A new telegraph company has been formed, under the names of Howse, Brett, and Wilmer, who, it is said, are to introduce their form of telegraph into various countries,—Mr. Howse, an American, into the United States; Mr. Brett, over the Continent; and Mr. Wilmer, in this country. The recent trial from London to Norwich was made on this principle of telegraph. The operator plays on keys like those of a pianoforte, each key printing a capital letter on the paper at the other terminus of the wire. The instrument is described as a tell-tale and self-acting printing machine or copyist.

ESCAPE FROM FIRE.—In every upper front room of every house, there should be a strong iron hook, firmly fastened near the window. In some street, the house, say No. 7, is on fire; at the first alarm, the police, or persons whose duty it is to keep the apparatus, enter the house on the opposite side of the way, No. 40: one of those persons, already practised, throws a plummet, having a cord attached, into the window of 7, where the inmates pull the cord, of which the other end is tied to a wire rope having an eye or loop, which they pass over the hook; then 40 pulls the wire rope tight and fastens it to his window: another plummet is thrown by 40 with a cord as before, which is tied by 7 to some piece of furniture; 7 pulls the last-named cord, and thus brings to his window an open-work basket of wire, each wire being about the diameter of a lead pencil—the basket something of the form of a strawberry-pottle, and between 3 and 4 feet deep; he enters it, and is pulled over by 40: the part of the basket handle in contact with the wire rope has a roller to diminish friction: as soon as one individual is safely arrived through the window of 40, the basket is pulled back again by those remaining at 7, and the process repeated until all have crossed. All this might be accomplished with great rapidity, provided those in danger have presence of mind: it is cheap and portable.—F. U.

SANITARY ARRANGEMENTS IN MEXICO.—The following account of the sanitary regulations of the inhabitants of the city of Mexico, at the time of the conquest of that country by the Spaniards, may prove interesting to your readers, and at the same time stimulate them to rival the example of that semi-barbarous people, having so many greater facilities for doing so. I have extracted it from Prescott's "History of the Conquest of Mexico," vol. i., book iv., p. 464. The population of the city was supposed to be about 300,000; there was, therefore, one in every 300 persons employed in cleansing the streets daily:—"A careful police provided for the safety of the city. A thousand persons are said to have been employed daily in watering and sweeping the streets, so that a man—to borrow the language of an old Spaniard—'could walk through them with as little danger of soiling his feet, as his hands.' The water, in a city washed on all sides by the salt floods, was extremely brackish. A liberal supply of the pure element, however, was brought from Chapoltepee, "the grasshoppers' hill," less than a league distant. It was brought through an earthern pipe, along a dike constructed for the purpose. That there might be no failure in so essential an article when repairs were going on, a double course of pipes was laid. In this way a column of water of the size of a man's body was conducted into the heart of the capital, where it fed the fountains and reservoirs of the principal mansions. Openings were made in the aqueduct as it crossed the bridges, and thus a supply was furnished to the canoes below, by means of which it was transported to all parts of the city."—JOHN PERCEVAL.

CHANGE IN STRUCTURE OF IRON.—At the Liverpool Polytechnic Society, Mr. Grantham adduced experiments by Mr. Nasmyth showing that although "cold-sweating" might be proper in many cases, yet (for railway axles and the like) that safety might be secured for the metal, when finished from the hammer or the lathe, by proper annealing. It was also frequently proper to renew the axles entirely. In reference to a statistical account of failures and falls in bridges, Mr. S. Perks said, he had had experience in cast-iron girders, and did not approve of trusting to them too far. He had known one cast to-day, and apparently sound, break of itself in the yard next day. Mr. Grantham thought the iron must have been originally of the same texture which it presents when broken. Mr. C. S. Smith thought that the safe mode was to believe that a change did take place, and that it would be well to anneal all axles, so that they would retain their fibrous texture or tenacity.

GLOUCESTER LITERARY AND SCIENTIFIC ASSOCIATION.—On Thursday, the 3rd inst., Mr. J. Clarke delivered a lecture on Architecture, in continuation of one previously given on the same subject. Mr. Clarke passed in review the architecture of the Jews, the Persians, the Hindoos, and the Chinese.

WHAT SHALL WE DO WITH OUR DEAD?—In last volume of THE BUILDER (p. 477), we rather timidly suggested—knowing the strength of the prejudices with which we had to contend—that it is a "pity it were not the modern practice, as it was the more sensible practice of the ancients, to burn or embalm all the putrifiable matter of the dead." A correspondent promptly responded to the hint, in an article inserted (p. 547) under the heading of the present paragraph, and an extract from which was quoted by not a few of our influential contemporaries. These beginnings of a new and important question, arising naturally out of the more general subject of burial in towns, are not very likely, it now appears, to drop without further discussion, though we still do fear the mighty prejudice of the people in favour of the worm. The association just formed, as we last week announced, for the solemn reinstitution of the funeral pyre, will at least keep the question alive should it fail to do much more. In the meantime, might we further suggest, that until the public mind shall be somewhat familiarized with this great sanitary idea, the difficulty may be less to reconcile it to the practice of imbedding each corpse in a coffin filled up and compressed with quick lime. Such a practice would at first be less repugnant perhaps to public feeling, and we do believe, that were the Legislature at once to establish it as a law, the propriety of the practice would be silently, though it might be with a sigh, acceded to. The last office, previous to burial, and after the last lingering look had been taken, might be the formal sprinkling of the dead with the best of all *earth* for the accomplishment of so sacred and efficient an end as this summary return of "dust to dust."

RAILWAY RATING.—At Macclesfield petty sessions, on 31st ult., the London and North-Western Railway Company appealed against the parochial assessment both of their line through the township, and of the new station jointly occupied by them and the North Staffordshire Company. Mr. R. Perrin showed that the railway did not possess any rateable value at all, as a tenant could not be found to pay any rent for it. In reference to the stations, Mr. Samuel Hunt, surveyor, of Stockport, stated that the whole, finished and in progress, was fairly rateable at 362*l.* 16s. 11d., of which only 113*l.* was assignable to the appellants. The magistrates came to the unanimous conclusion that the assessment of the line must be reduced from 1,500*l.* per mile to 60*l.* per mile, and the share of the station from a rateable value of 220*l.* to a gross annual value of 120*l.*, rateable 112*l.* 10s.

HYDRO-ELECTRIC LIGHT.—A correspondent of the New York *Sun* claims to have invented and put in use an apparatus "separating the oxygen of which water is composed, and producing gases for lights. This it does at no other expense than that of the machinery, as no material but water is used. The water is decomposed by a current of electricity, evolved by the apparatus itself. The labour of five minutes, once in two hours in the day, in winding up the machine, is all that is required to produce 250 cubic feet of gas." There is some little obscurity in this description, but it seems to refer to the production of light in recombining the oxygen with the hydrogen, after the decomposition of the water into these gases has been effected by galvanic action,—in brief, it is just a sort of oxyhydrogen light. This, we need scarcely note, is a different thing altogether from the hydro-carbon light more than once alluded to in THE BUILDER.

STAINED GLASS.—A subscription is to be set on foot for a large stained-glass window, to be put up in some part of Worcester Cathedral, in memory of the late Queen Dowager.——A new east window, by Wailes, has been recently put up in St. Paul's Episcopal Church, York-place, Edinburgh. The style is Perpendicular, and the framework is divided into ten lights by transom and mullions. In each division of the two tiers is a single figure, with canopy. Amongst these are Melchisedec, Moses, and John the Baptist, St. Paul, &c. The tracery is filled up by angels bearing shields of the Scottish sees. Want of mellowness in tone is complained of by the Scottish critics, who, however, admit the general effect to be brilliant, and the execution correct.

HULLMANDEL'S RAZOR STROP.—Mr. Hullmandel, whose name is known to most of our readers in connection with lithography, has been applying himself to the manufacture of a new razor strop, and has produced one which seems able, like education, to sharpen and polish the dullest little blade. While engaged in putting things "on the stone," he has devised something to put on the leather, and his best friends may now take a rub from him as they would from no other man, for it is positively a blessing, especially to tough beards. Since "men for their sins have shaving, sure, entailed upon their chins," those who provide them with the means of getting through it with something like comfort deserve reward; and this, if all his strops are as good as the one sent to us, Mr. Hullmandel has certainly effected.

TRIUMPHAL ARCH, WINCHESTER.—Mr. Coles, the surveyor to the Winchester corporation, has published a lithograph of a triumphal arch, erected upon the occasion of the Prince Albert's visit to that city in July last. It was erected nearly on the site of the ancient north gate of the city, on the road by which his Royal Highness entered the city from the railway station. It was nearly 50 feet high. The design was made and the whole carried into execution in three working days. A framework of scaffolding was first built; and facing to form grounds, pilasters, entablature, &c., made of inch deal boarding, coloured in distemper (the moulded projections, &c., simply splays), then filled in with evergreens.

METROPOLITAN SEWERS COMMISSION.—A general court was held on Friday last, Sir J. Burgoyne in the chair: present, Messrs. Hawes, Lawes, Stephenson, Dawson, and Veitch. Mr. Woolrych the secretary's salary was raised from 600*l.* to 800*l.* a-year. The power to enter premises, examine drains, and order necessary works thereanent, under the 49th section of the Sewers Act, was brought into operation for the first time, in notices on Mr. F. Ball, 92, Grosvenor-street, and B. Bussey, 21 and 22, Charles-street, Lisson-grove. It was ordered that a rate be made on the Ranelagh district on 15th inst. This district is upwards of 10,000*l.* in debt. The Sewage Manure Company were granted permission to connect their works with the drainage of Bull's-garden, Stanley-bridge, Fulham. Some other business of a minor description was transacted.

THE LIVERPOOL ARCHITECTURAL SOCIETY had a meeting on Wednesday week, Mr. J. A. Picton, one of the vice-presidents, in the chair, when, amongst other business, Mr. F. Howard exhibited a painting on glass for the museum at Bolton, with some remarks which led to a discussion on the propriety of pictorial delineation of opaque objects on a transparent substance such as glass. A paper on the early history of sculpture, as a sister art to architecture, was then read by Mr. Macbride.

MODEL DWELLINGS FOR HULL.—On the last day of the year just closed, a meeting—"one of the most numerously attended, most protracted, and most animated public meetings ever known in this borough," says the *Packet*, was held in the Town-hall of Hull, when resolutions were unanimously passed, recommending the corporation to erect improved dwellings for the poorer order of the working classes.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*Being Illustrations of the Edifices of the Nineteenth Century, and of some of the Architectural Works of the Middle Ages.*

Edited by GEO. GODWIN, F.R.S.,

Fellow of the Institute of Architects; Corresponding Member of several Societies.

Part V. of this work, price 2s. 6d., containing Views of Waterman's Hall, Ghent, and some Jottings in Belgium; the Entrance-front, Hall, and Staircase of the British Museum; View of the Old Museum; the Small-pox and Vaccination Hospital, Highgate-hill,—Elevation and Plan; Queen's College, Cork; Wells Cathedral,—Sugar's Chantry Chapel, &c.; and the Castle at Newcastle, with descriptive letter-press, and numerous details, is now ready.

Office of THE BUILDER, 2, York-street, Covent Garden, or by order of any bookseller.

## MEETINGS OF SCIENTIFIC BODIES

*To be held during the ensuing week.*

TUESDAY, Jan. 15.—Institution of Civil Engineers, 8 p.m.
WEDNESDAY, 16.—Society of Arts, 8 p.m.
THURSDAY, 17.—Royal Society, 8½ p.m.; Society of Antiquaries, 8 p.m.; Royal Academy, 8 p.m.

## TO CORRESPONDENTS.

"*Water Tanks.*"—Will some of your readers tell me a cheap and efficient way of making water tanks—size, 35 feet by 15 feet? Fire bricks built with Roman cement are recommended, but perhaps they can point out a better plan, with a covering for same.—B.

"*Lowe's Stench Trap Grid.*"—With reference to our notice of this, Mr. S. S. Rawlinson has favoured us with a letter, showing that cast-iron stench traps, similar in principle, have been used in his town (Nottingham) for twenty years.

✠ "W. d'E." (we are flattered by good opinion; the only objection we have to complying with the request is our personal connection with the building; it shall not be lost sight of, however), "*Filius Ecclesiæ*" (shall appear), "R. D.," "E. I'A.," "G. C." (we have not time to refer), "T. L. W." (we shall be glad to receive news), "One of the Duped," "R. A.," "W. W.," "G. P." and "J. G." (publisher will write), "J. M." (inquire at Registerer's, Somerset House), "Copyism" (the paragraph last week thus headed being signed B., and referring to Brandon's "Analysis," the author of that work wishes us to mention that it was not written by him), "Lady B." (next week), "J. M.," "A." (we do not know; he would learn at the Registrar's office), "B. B." (shall hear from us), "F. C. H." (send us particulars; we are disposed to engrave it), "Jno.," Sheffield (write to the secretary of Institute, 16, Grosvenor-street, London)' "G. W.," "J. J. L." (shall hear), "A Bart.," "R. N." (please call in York-street), "E. S.," "J. H., jun.," "X.," "J. L.," Manchester, "A. Z.," "Junius," (Messrs. F. and G. are the architects; we will inquire into the fact mentioned). "J. R." (the knotting alluded to is insoluble in water; the manufacturers, by whom the letter was written, decline to state its composition), "M. Brs." (your letter was simply a personal advertisement, then?), "T. L.," "R. and M.," "J. J. (shall appear).—"A Treatise on the Progress of Decorated Window Tracery," by Edmund Sharpe, M.A., architect (London, John Van Voorst); "Churches of the Middle Ages," (Part IV.); "Bradshaw's Railway Directory, Shareholders' Guide and Manual (Adams, London; and Bradshaw and Co., Manchester).

NOTICE.—All communications respecting *advertisements* should be addressed to the "Publisher," and not to the "Editor:" all other communications should be addressed to the EDITOR, and *not* to the Publisher.

"*Books and Addresses.*"—We have not time to point out books or find addresses.

## ADVERTISEMENTS.


**TO CONSUMERS of PLASTER of PARIS.**—The Advertiser is in a position to supply the above article in quantity at extreme low rates.—Particulars may be had on application.—Address, W. B. WILKINSON, Prudhoe-street, Newcastle-on-Tyne.

**GREAVES'S BLUE LIAS LIME,** WARWICKSHIRE CEMENT, BLUE SAWN FLAGGING STONE, and MARBLE WORKS, WARWICK. Agents—Messrs. Rutty and Verey, 2, South Wharf, Paddington; Messrs. Gladdish's, Pedlar's-acre, Lambeth; Mr. J. Thompson, Back Kingstreet, Manchester; Mr. T. Wylie, i, Royal Bank-buildings, Liverpool; Mr. J. Harrison, Linenhall-street, Chester; Mr. T. E. Mycock, 108, Fargate, Sheffield; Mr. J. Bonehill, Berkley-street, Birmingham; and can be delivered by the Proprietor's own boats to any part of the kingdom.

**ATKINSON'S CEMENT.**—This Cement has hitherto been manufactured in Yorkshire, and, through long detention at sea, has often proved stale and unfit for use on its arrival in London. By the arrangement now made, the Cement will be manufactured in London, and thus presented to consumers in a fresh and genuine state, by the sole Agents, J. B. WHITE and SONS, Millbank-street, Westminster.

**KEENE'S and PARIAN CEMENTS,** for internal stucco, are employed very advantageously in place of wood for skirtings, architraves, and panel mouldings, and for in-door flooring, instead of stone. The peculiar properties of PARIAN Cement allow of its being painted or papered upon within a few hours of its application, and thus render it an important substitute for common plastering in those cases where expedition and beauty of finish are essential.—J. B. WHITE and SONS, Millbank-street, Westminster, Patentees of KEENE'S Cement, Licensees of PARIAN Cement.

**PORTLAND CEMENT,** as manufactured by J. B. WHITE and SONS, possesses all the properties of the best Roman Cement, but has the advantage over that material of wholly resisting frost. When used as a stucco it does not vegetate or turn green in damp situations, and requires no colouring. Employed as an hydraulic mortar for brickwork, it carries four to five measures of sand to one of cement, and is proved by trial to become harder and stronger in these proportions than Roman Cement with but one measure of sand. This superior connecting power, combined with its eminently hydraulic properties, point it out as the fittest material for building sea and embankment walls, the lining of reservoirs, cisterns, and baths, and for all those purposes where strength and a perfect resistance to water are required.

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**PORTLAND CEMENT,** solely MANUFACTURED by WILLIAM ASPDIN, Son of the Patentee.—Messrs. ROBINS, ASPDIN, and Co. request reference to No. 296, page 491; and also Nos. 284 and 285, pages 343 and 351 of "The Builder," for accounts of EXPERIMENTS on the strength of Portland Cements, whereby the great superiority of their Cement is manifest. This Cement has been proved for upwards of twenty years in the Thames Tunnel to resist the action of water; it is stronger in its cementitious qualities, harder, and more durable than any other description of Cement; it does not vegetate, oxydate, or turn green; nor is it affected by any atmospheric influence whatever the climate, resisting alike the action of frost and heat. It is manufactured to set in from five to sixty minutes. For all purposes that Cement is applicable the Proprietors challenge competition.—Orders received by Messrs. ROBINS, ASPDIN, and Company, at their Manufactory, Northfleet, Kent, and their Wharf, Great Scotland-yard, Whitehall; also by their Agent at the Depôt, 1, Back Goree, Liverpool.

**MARTIN'S PATENT FIRE-PROOF and ORNAMENTAL CEMENT—REDUCTION of PRICE.**—The Patentees beg to inform their Friends and the Public that they have made arrangements which enable them to offer this invaluable cement at a considerably reduced price. It has now been before the public so many years, and has obtained so high a standing in the estimation of all who have used it, that it is unnecessary to comment on its merits. The Patentees, however, feel called upon to observe, that by its use—from the greater amount of surface which a given quantity will cover, and the small amount of labour required in working it, a saving of 25 to 30 per cent. is effected as compared with other cements for internal use. Specimens shewing its beauty, hardness, and applicability to all plain and ornamental purposes, may be seen; and the Cement in any quantity obtained of the Patentees, Messrs. STEVENS and SON, at their Plaster and Cement Works, 186, Drury-lane, London.—Agent for Liverpool.

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**EMERSON'S PATENT LIQUID CEMENT** is ready for use, is simple in its application, and only ONE-EIGHTH the cost of oil paint; for beauty it is pre-eminent over all other materials used on the fronts of houses, giving the exact appearance of FINE CUT STONE; can be used at once on fresh Roman cement or other plastering; is particularly calculated for country houses, villas, or gate entrances that have become soiled or dingy, which can be beautified in any weather, at a trifling cost.—Sold in casks of 1, 2, and 3 cwt., at 8s., 15s., and 28s. each.—G. BELL and Co., 16, Basing-lane, Cheapside.

**THE PARIAN CEMENT, for INTERNAL STUCCO,** which you supplied at Messrs. J. & R. MORLEY'S warehouses and dwelling in Wood-street, Gresham-street, in the City, has been used throughout the premises, in every story; altogether about ten thousand yards superficial, chiefly upon recently built walls, and a small portion upon timber partitions, and that with the most perfect and satisfactory result. I feel it also necessary to observe, that the plasterer's work was almost invariably followed up on the next day by the painters, thereby enabling me to have the buildings complete in the shortest possible time, both for business and for the occupation of the establishment. I am, therefore, of opinion, that the use of this new material is a most valuable feature in building operations, and fully justifies that which I was given to understand, viz., that it was an extraordinary material. I think it right to mention that I am at the present time having a great extent of similar work executed at another range of buildings, where time and the quality of the work are of the utmost importance.

(Signed) JNO. WALLEN, Architect, London.

To Messrs. Chas. Francis and Sons, Manufacturers, Nine Elms.

2, Ingram-court, Fenchurch-street.

**MESSRS. MIALL, MARSHALL, and Co.,** MANUFACTURERS of ROMAN CEMENT, SUBMARINE BLUE LIAS LIME and CEMENT, and IMPROVED GLAZED STONE WARE TUBULAR DRAIN PIPES, are prepared to supply the above articles of a superior quality, and at reduced prices.

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**J. W. LINDRIDGE,** Medway Grey Stone Lime Burner, Rochester, begs to inform builders, contractors, and others, that he has OPENED A WHARF, for the Sale of Grey, White, and Chalk Limes, Sand, Cement, Pots, Tiles, &c., wholesale and retail, No. 78, QUEEN'S WHARF, GREAT CAMBRIDGE-STREET, HACKNEY-ROAD, in conjunction with Pembroke Wharf, Caledonian-road, Islington, and 242, High-street, Wapping.—N.B. Orders of any magnitude will be promptly attended to.

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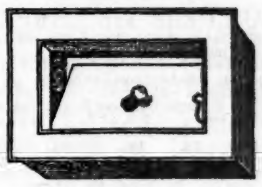

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| 1¼ in. yellow, per sq. | 20s. 0d. | 1 in. spruce, per sq. | 12s. 0d. |
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Widths measured after being wrought. Quantities not less than thirty squares delivered within 5 miles free.

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**TIMBER** of any size, PLANK, DEALS, and BATTENS, &c., Sawn on the most approved principle. Boards, &c., Prepared, Matched, and Grooved, by Muir's Patent Machinery. The Mills have all the advantages of navigation and water-carriage, being connected with the Thames by the Grosvenor Canal. Goods fetched from the docks and carted home free of charge.

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TO ARCHITECTS, BUILDERS, UPHOLSTERERS, AND OTHERS.

**WOOD CARVING** done in the cheapest and best manner. Estimates given to any amount. Pulpits, reading-desks, altar-rails, stalls, and other church fittings supplied complete. Old carvings restored by J. STALON, Wood Carver and Manufacturer, 42, Berwick-street, Soho, London.

**JORDAN'S PATENT MACHINE CARVING and MOULDING WORKS** for WOOD and STONE, Belvedere-road, Lambeth, and 154, Strand.—TAYLOR WILLIAMS, and JORDAN beg to call the attention of the building community to a new feature of their establishment, and, at the same time, to thank their numerous patrons and friends for the very liberal support they have lately experienced, which, they assure them and the public, it will be their constant endeavour to deserve, by giving their customers an increasing share of the advantages arising from the constant improvements in the machinery which they have just succeeded in applying to the production of the most intricate carving in Caen and other freestones, and in statuary marble.

T., W., and J. particularly solicit the attention of architects and builders to the fact that, by the use of this machinery, a very large saving, both of time and money, is effected,—so great, indeed, that in many cases they can deliver a well-finished article in Caen stone for less money than it can be obtained in cement, while their wood-carving will, in some cases, be found to come into close competition with the best kinds of composition ornament.—For prices and estimates apply at 154, Strand.

TESTIMONIAL FROM CHARLES BARRY, ESQ.

"Westminster, May 16th, 1848.

"Gentlemen,—In reply to your letter requesting my opinion of your patent Carving Machinery, I have much pleasure in stating, from an experience of more than two years, in its application to the production of the wood carvings of the House of Peers, and other apartments of the New Palace, at Westminster, that I am enabled to make the most favourable report concerning it, and to add that it has more than justified the favourable terms in which I recommended it in 1845 to her Majesty's Commissioners of Woods and Works for adoption.—I remain, Gentlemen, yours faithfully,

"CHARLES BARRY."

Messrs. Taylor, Williams, and Jordan."

**SNOXELL'S PATENT SAFETY REVOLVING WOOD SHUTTERS,** Manufactory, 26, REGENT-STREET and 121, CHANCERY-LANE. Patent sealed on the 4th day of February, 1845, for Fourteen Years, for Improvements in Revolving Shutters of WOOD and IRON, consisting of Six Methods of Raising and Lowering Shutters, without Machinery, and Two for Hinging and Sheathing the Edges of Wood Laths with Iron.—The Patentee having fixed up some hundreds, will feel pleased in forwarding the Testimonials of Architects, Principals of large Establishments, and others, having them now in use, which fully guarantees the Patentee in stating they are beyond dispute superior to any other Revolving Shutter for durability, security, and simplicity, without the use of cog-wheel worm and screw gear, or any other complicated machinery employed by other makers.

**BUNNETT and Co., ENGINEERS,** Patentees and Manufacturers of REVOLVING IRON AND WOOD SAFETY SHUTTERS, and of ORNAMENTAL SASH BARS, MOULDINGS, STALL-PLATES, &c.,
FOR SHOP-FRONTS, AND OTHER WINDOWS, OR SKYLIGHTS, IN BRASS, COPPER, ZINC, IRON, &c.

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CUNDY'S PATENT HOT-AIR VENTILATING STOVE

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at the following GREATLY REDUCED PRICES, viz., A STOVE calculated to WARM and VENTILATE dry BUILDINGS of the following cubical areas:—

| | Cash Prices. | Credit Prices. | |
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| From 5,000 to 10,000 cubic feet ..... | £6 0 0 | £8 0 0 | or 25 per cent. off the credit price for cash on delivery. |
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A PROSPECTUS explanatory of the merits of the Stove, and containing numerous highly respectable TESTIMONIALS of its efficiency, NONE OF WHICH WERE OBTAINED UNTIL AFTER A WINTER'S TRIAL, will be forwarded upon application to J. E. DOWSON and Co.

THE STOVE MAY BE SEEN IN OPERATION AT THE MANUFACTORY, AT KING'S COLLEGE (WHERE SEVERAL HAVE BEEN FIXED), AND AT MESSRS. HITCHCOCK AND ROGERS'S, ST. PAUL'S CHURCHYARD.

TESTIMONIAL.

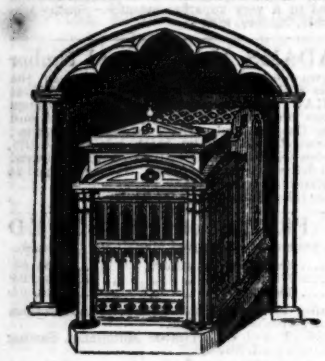
From the Rev. MATTHEW O'BRIEN,
(Professor of Natural Philosophy and Astronomy) M.A., F.R.S., &c., King's College.

Upper Norwood, 22nd June, 1846.

I beg to certify that one of Mr. Cundy's Patent Stoves was put up in my lecture-room at King's College last year, in place of a common stove (of Arnott's construction, I believe). I have no hesitation in saying, from actual experience, that Mr. Cundy's Stove is far superior both in producing warmth over the whole room, and in promoting ventilation, without disagreeable currents of air, or close smell.

MATTHEW O'BRIEN.

FOR CHURCHES, CHAPELS, SCHOOLS, WAREHOUSES, PRIVATE DWELLINGS, &c. &c.



## NOTT'S PATENT STOVES,

After TWENTY YEARS' TRIAL, still maintain their decided superiority. They give twice as much heat as any other stove, with a smaller consumption of fuel; they burn for eight or ten hours without replenishing; they do not generate offensive and dangerous gases; and they have, when lighted, a very

BRILLIANT AND CHEERFUL APPEARANCE FROM THEIR TRANSPARENT FRONTS.

By the addition of a BOILER AND HOT-WATER PIPES, they may be made to heat, at the same time, DISTANT APARTMENTS, CONSERVATORIES, &c. The are made in various sizes and patterns, and the PRICES have recently been GREATLY REDUCED.

A STOVE AT TWELVE GUINEAS, AS SHEWN AT SIDE, WILL WARM A SMALL CHURCH.

Two or three hundred references can be furnished on application; only a few can be mentioned here, viz.:—

St. Saviour's Church, Southwark.
Christ Church, Westminster.
Trinity Church, Brompton.
Old St. Pancras Church.
Christ Church, Hoxton.
St. Vedast's, Foster-lane.
Portman Chapel, Baker-street.
The Pantheon, Oxford-street.
National Debt Office, Old Jewry.
Picture Gallery, Knightsbridge (late Chinese Exhibition).
Religious Tract Society, St. Paul's Churchyard.
Mr. Parker, West Strand.
Mr. Gilbertson, Ludgate-hill.
Messrs. Perkins and Bacon, Fleet-street.
Messrs. Ridgway and Co., King William-street.
St. Pancras National Schools,
Finsbury Charity Schools,
Stepney Grammar School, &c. &

J. L. BENHAM AND SONS, 19, WIGMORE-STREET, CAVENDISH-SQUARE, PATENTEES.

N.B. Also, a Large Stock of Arnott's, Cundy's, Chanter's, Chesterman's, Joyce's, Walker's, Chunk, Suspension, and other Patent Stoves.

SYLVESTER'S GRATES.—These Grate do not now require either description or recommendation their unequalled comfort and economy in fuel having been tested with perfect satisfaction, by numbers of the nobility and first families in the kingdom.

The improvements recently patented do away with the necessity of an ashes-pit, and obviate all difficulty in fixing. They are made in every style of elegance, from the specimen exhibited by the Society of Arts in London in 1848, and in the Birmingham Exposition of this year, down to the most inexpensive form for a bedroom.

May be had from the Manufacturers, through the Ironmongers generally in town and country.

JOHN BULLOCK and Co., Hope Iron-works, Primrose-street, Bishopsgate, Manufacturers of iron roofs for conservatories, &c., verandahs, cast or wrought stair-cases, light or heavy railing, gates, strained wire fences, hurdles, bedsteads, and every description of wrought or cast iron work for building purposes; corrugated and galvanized iron roofing, conservatories or other buildings heated by hot water or hot air.

IRON FOUNDRY, 80, Goswell-street (late of Brick-lane, St. Luke's).—J. J. JONES having made great additions to his STOCK of PATTERNS, begs to inform the Trade, that he can now supply them with Plain and Ornamental Iron Columns Girders, Railings, Gates, Iron Coping, Balconies, Window Guards, Verandahs, Ornamental Staircase Panels, Iron Staircases, Tomb Enclosures, Trellis Panelling, Lamp and other Brackets, Cantilevers, Newel Bars, Water Closet Work, Area Gratings, Fly and other Wheels, Wheel Plates, &c.

BAKER'S OVEN WORK, Forge Backs and Troughs, Rain Water Pipes and Gutters, Sash Weights, Furnace Bars, Stoves, Ranges, &c., always in stock.

FOUNDRY AND IRONWORKS,
168, DRURY-LANE, and CHARLES-STREET, DRURY-LANE,
GLOVER, BROTHERS,

Solicit the attention of the Trade to their extensive Stock of PATTERNS for CASTINGS of EVERY DESCRIPTION, either structural or ornamental.

Patterns of Girders, Columns, Balconies, Railing, Ornamental Carriage and Park Gates, Lamp and Street Posts, Tanks, Pipes, Wheels, Pinions, Lathes, and Steam-engines; Range and Hot-plate Metal. An improved Soot Door adapted for internal work.

A large stock of Rain-water Pipes, Plain and O G Gutters, Air-bricks, Sash Weights, Air-tight Sewer Grates, Stable Fittings, Hurdles, &c.

Plain and Ornamental Vases 20 per cent. cheaper than Terra-cotta.

Estimates given for Iron Buildings, Wrought-iron Roofing, Greenhouses, Staircases, Wrought-iron Girders, Fireproof Doors, Book Safes and Strong Rooms, Tanks and Boilers of every description of ironwork to specification, and the work executed with every attention to quality and despatch.

GLOVERS' IRONWORKS,
168, DRURY-LANE, and CHARLES-STREET.

TO GAS AND WATER COMPANIES, ENGINEERS, AND CONTRACTORS.

ANDREW M'LAREN & Co., Ironfounders, STEEL YARD WHARF, UPPER THAMES-STREET, have always on hand a large STOCK of SOCKET PIPES of all sizes, with the usual connections. Retorts, columns, girders, and all description of castings contracted for.

Their stock of goods for GENERAL IRONMONGERS is unequalled for variety and lowness of price: comprising, range, register, and elliptic metal and stoves, rain-water pipes, O. G., and half-round guttering, sash-weights, railing bars, panels, bakers' oven work, sink traps, air bricks, water closet metal, &c. &c.

Printed list of prices, and books of drawings for the use of ironmongers, forwarded on application.

THE GALVANIZED IRON COMPANY,
No. 3, Mansion-house-place,

Call the particular attention of Architects, Builders, and others, to their patent process of galvanizing, or coating iron with PURE ZINC, which, from its action being chemically true, effectually and PERMANENTLY prevents RUST. The process is applicable to all sorts of iron work (whether cast or wrought) in use for building purposes—such as ROOFS, gutters, girders, floors, WATER or GAS PIPES, railings, window sashes and guards, blinds, skylight frames, chimney cowls, cisterns, screws, nails, locks, keys, chains, wire guards, &c., &c., &c. The Company undertake to supply GALVANIZED IRON, or to GALVANIZE every description of iron work, in any quantity required.—Particulars and prices at the Offices of the Company, 3, Mansion-house-place. London Galvanizing Works, Millwall, Poplar. S. VINCENT, Secretary.

N.B. This Company's patent process is applied to the roofs of the New Houses of Parliament, the sheds in the dockyards at Woolwich, Portsmouth, and Devonport, the Waterloo Station belonging to the London and North-Western Railway Company at Liverpool, and numerous other railway stations, &c., &c., with the most perfect success.

IRON ROOFING WORKS,
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Office,—3A, MANSION-HOUSE-PLACE, LONDON.
JOHN H. PORTER,
PATENTEE

Of the Corrugated Iron Beams, Girders, and Fire-proof Floors: MANUFACTURER OF IRON ROOFS AND BUILDINGS, Chiefly of THE PATENT GALVANIZED IRON.

This material has been employed by J. H. PORTER for several years past in the construction of Iron Roofing for RAILWAY STATIONS and DOCKYARDS, at home and abroad; FARM BUILDINGS, FACTORIES, GASWORKS, WAREHOUSES, &c.; SUGAR-HOUSES, MEGASS and COFFEE-SHEDS, STORES, DWELLINGS, and MARKET-PLACES, in the East and West Indies, China, at the Cape of Good Hope, and in other parts of the world; Iron-bar and Strained-wire Fences, Sheep and Cattle Hurdles.

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HAYWARD, BROTHERS, late R. HENLY and Co., WHOLESALE IRONMONGERS, and Manufacturers of KITCHEN-RANGES, STOVES, &c., 196, Blackfriars-road, and 117, Union-street, Borough.

Strong Self-acting Kitchen Ranges, with Back Boiler and Oven and Wrought Bars:—

| 3 ft. | 3 ft. 3 in. | 3 ft. 6 in. | 3 ft. 9 in. | 4 ft. |
|---|---|---|---|---|
| £3. | £3. 10s. | £3. 15s. | £4. | £4. 10s. |

Henly's Patent Improved, with back Boiler and Wrought Iron Oven:—

| 3 ft. | 3 ft. 3 in. | 3 ft. 6 in. | 3 ft. 9 in. | 4 ft. |
|---|---|---|---|---|
| £5. | £5. 15s. | £6. 5s. | £6. 10s. | £7. |

Best Register Stoves, at 7d., 8d., and 9d. per inch.
Do. Elliptic do. at 3½d., and 4d. do.

Manufacturer of WOLFASTON'S PATENT REGISTER STOVES, a certain cure for SMOKY CHIMNEYS, and effecting a great saving in fuel. To be seen in use daily.

Orders from the Country, accompanied with a remittance or reference, will meet with prompt attention.

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Cottage Ranges, with Ovens and Boilers, 2 ft. 2 in. 40s.; 3 ft. 4 in 42s.; 3 ft. 6 in., 44s. 3 feet Cottage Ranges, 38s.

Self-acting Ranges, with Circular Oven and Back Boiler, best Wrought Bars and Bright Fittings,

| 3 ft., £2. 18s. | 3 ft. 6, £3. 7s. | 4 ft., £3. 15s. |
|---|---|---|

Best Patent Cut Clasp.

| 4½d. | 5d. | 7d. | 10d. | 1s. 2d. | 1s. 8d. per 1,000 |
|---|---|---|---|---|---|
| 3d. | 4d. | 6d. | 8d. | 10d. | 20d. |

Best Sheet Floor Brads, 12s. 6d. per cwt.
Best Town Glue 38s. Do. Scotch, 52s. per cwt.

Best Patent Sash Line.

| 4s. 3d. | 5s. | 6s. 6d. | 7s. 6d. | 10s. | 12s. per gross. |
|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 |

At F. R. WILLIAMSON'S IRONMONGERY and STOVE WAREHOUSE, 35, Chiswell-street, Finsbury-square.

Lists of Prices had on application at the Warehouse, or by letter pre-paid, inclosing postage stamp.—Warehouse closes at 7 o'clock.

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Fine Cut Clasp and Rose.

| 15s. | 14s. 6d. | 14s. | 13s. | 13s. per cwt. |
|---|---|---|---|---|
| 1½ | 1¼ | 2 | 2½ | 3 inch. |

Cross Garnet Hinges, per dozen pair.

| 2s. 9d. | 3s. 3d. | 4s. 3d. | 5s. | 6s. | 8s. |
|---|---|---|---|---|---|
| 10 | 12 | 14 | 16 | 18 | 20 in. |

Best Bright Tower Bolts, per doz.

| 1s. 3d. | 1s. 7d. | 2s. | 2s. 6d. | 2s. 10d. | 3s. 3d. | 3s. 7d. |
|---|---|---|---|---|---|---|
| 3 | 4 | 5 | 6 | 7 | 8 | 9 in. |

Iron Rain-water Pipe.

| 9½d. | 10½d. | 1s. 1d. | 1s. 5d. | 1s. 8d. per yard. |
|---|---|---|---|---|
| 2 | 2½ | 3 | 3½ | 4 inch. |

Best London Glue, 38s. per cwt.
Cast Lath Nails, 10s. per cwt.
Air Bricks, 3s. 6d. per doz.
Hooping for bond, 8l. 10s. per ton.
Sash Weights, 5s. per cwt.
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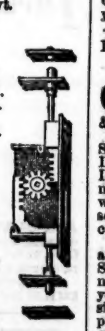
Wholesale Ironmongers, Brass Foundry and Nail Warehouse,
5 and 6, Broad-street, Bloomsbury, London.
AGENTS FOR LEA'S PATENT MORTISE LOCKS AND BOLTS.



OLD-ESTABLISHED WHOLESALE IRONMONGERY WAREHOUSE, Kitchen-range, and Stove-grate Manufactory, 18, Cross-street, Walworth.

JOHN GRICE most respectfully solicits the attention of Architects, Builders, and Carpenters, to his Stock of Black and Bright Stoves, Kitchen Ranges, &c., &c.

Black Registers, from 6d. per in. and upwards.
Bright ditto with Black and Bright Bars, 2l. 10s. and upwards.
Self-acting Kitchen Ranges, with Oven and Back Boiler:—

| 3 ft., 2l. 8s. | 3 ft. 6 in., 2l. 15s. |
|---|---|

Elliptic Stoves, with double backs, 3d. per in.

All articles made on the premises and warranted, and delivered free of expense within five miles of London. Bell-hanging in superior style, hung in secret, 8s. per pull.

TO BUILDERS AND CARPENTERS.

J. H. BOOBBYER and CO., late Sturch and Boobbyer, at their Ironmongery, Brass Foundry, and Nail Warehouse, No. 14, Stanhope-street, Clare-market, London, for the supply of Carpenters, Builders, Cabinet-makers, Upholders, &c., at wholesale prices.

Best Cut Sheet Flooring Brads, 12s. per cwt.

Fine Cut Clasp Iron.

| 15s. | 14s. 6d. | 14s. | 13s. | 13s. per cwt. |
|---|---|---|---|---|
| 1½ | 1¼ | 2 | 2½ | 3 inch. |

Best Bright Tower Bolts.

| 1s. 3d. | 1s. 7d. | 2s. 2d. | 2s. 6d. per dozen. |
|---|---|---|---|
| 3 | 4 | 5 | 6 inch. |

Best Patent Sash Line.

| 4s. | 4s. 6d. | 6s. | 7s. 3d. | 9s. | 10s. 9d. per gross. |
|---|---|---|---|---|---|
| No. 1 | 2 | 3 | 4 | 5 | 6 |

Cast Lath Nails, 10s. per cwt. Sash Weights, 5s. per cwt.
Air Bricks, 3s. 6d. per dozen.

DR. ARNOTT'S VENTILATORS.

| | |
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| 11 by 8 inches ..... | 5s. each. |
| 16 by 9 „ ..... | 8s. „ |

An assortment in Brass, Bronzed, Gilt, &c.

An extensive stock of Mortise Locks, Drawback Locks, Iron Rim Locks, and Latches, of every description, at very reduced prices; also Door Furniture, in china, amber, crystal, ivory, ebony, buffalo, horn, brass, &c., with Finger-plates, Bell-pulls and Levers en suite.

Agents for LEA'S PATENT MORTISE LOCKS and BOLTS, and inventors of SHIFTING BOLT MORTISE LOCKS, &c.

TO BUILDERS, CARPENTERS, &c.—The undermentioned are the PRESENT PRICES of IRONMONGERY, at YOUNG'S, 194, Oxford-street. Every other article equally low. Orders executed upon receipt of remittance or a respectable London reference.

| | 2 | 2½ | 3 Inches. | |
|---|---|---|---|---|
| Cast Butts..... | 5s. 3d. | 7s. 6d. | 11s. | per 6 dozens. |
| Cut Clasp..... | 5d. | 7d. | 1s. 2d. | 1s. 8d. per 1,000 |
| | 4d. | 6d. | 10d. | 20d. |

| | Nos. 3 | 4 | 5 | 6 | |
|---|---|---|---|---|---|
| Patent Line .... | 6s. 6d. | 7s. 3d. | 9s. 10d | 12s. | per gross |

| | 2 | 2½ | 3 Inches. | |
|---|---|---|---|---|
| Rain Pipe ..... | 11d. | 1s. 1d. | 1s. 3d. | per yard. |

HOT-WATER APPARATUS.—The attention of architects, builders, and others is respectfully requested to BENJAMIN FOWLER'S superior method of heating churches and chapels, halls, staircases, conservatories, forcing and greenhouses, manufactories and warehouses, kilns, rooms for drying timber, &c., and every variety of purpose for which artificial heat is required. Within the last twenty years some hundreds of buildings have been heated upon this plan, and the parties for whom they were executed are constantly expressing their satisfaction, also their willingness to vouch for their efficiency.

BENJAMIN FOWLER, late of 63, Dorset-street, removed to the new factory, Whitefriars-street, Fleet-street.

CAST-IRON PIPES, IRON WORK FOR OVENS, &c.

RAIN PIPES, &c.—F. A. TIDDEMAN, St. Ann's Wharf, Earl-street, City, near Blackfriars-bridge, keeps a large stock of Rain Pipes, Heads, Shoes, Elbows, &c., half round and O. G. Gutters, Socket Pipes for Water or Gas, Flanch Pipes, Sash Weights, and other Castings; Iron Work for Bakers' Ovens of every description, fitted complete, to be had in sets or in parts.—Prices equal to all competition. Contracts taken to any extent. Goods landed. A powerful crane.

TO ARCHITECTS AND BUILDERS.

CHUBB'S WROUGHT-IRON and FIRE-PROOF DOORS and FRAMES, for strong Rooms. A large stock of the above, of all sizes, made in the best manner, and of different strengths, fitted with CHUBB'S PATENT DETECTOR LOCKS, throwing from two to twenty bolts, constantly on sale, at very moderate prices. FIRE-PROOF SAFES of every size, and Patent Detector Locks and Latches for all purposes.—C. CHUBB and SON, sole Manufacturers, 57, St. Paul's Churchyard, London.

LEADBEATER, FIRE-PROOF SAFE AND DETECTOR LOCK MANUFACTURER TO HER MAJESTY'S BOARD OF ORDNANCE.

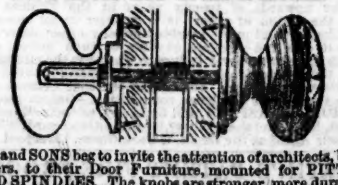
CAUTION to Purchasers of FIRE-PROOF DOORS for Strong Rooms, Safes, Chests, and Detector Locks, &c. &c. LEADBEATER, many years manufacturer for Chubb.

LEADBEATER begs most respectfully to inform Architects, Surveyors, Builders, &c., that he can supply them with IMPROVED DETECTOR LOCKS for universal purposes. STRONG WROUGHT IRON FIRE-PROOF DOORS, SAFES, and CHESTS, &c., on the most improved principles of security against FIRE and THIEVES, without the aid of "expensive machinery," which is employed by some inexperienced makers, but must be paid for; at prices 25 per cent. under any other house in London.

LEADBEATER offers ONE HUNDRED POUNDS reward to any person who can pick his improved detector locks or latches. Some thousands of Leadbeater's strong-room doors and safes have now been put up without a SINGLE COMPLAINT, and fifteen years' practical experience, during which he has adapted every possible improvement to real security, enables him to challenge competition with any house in London. A large assortment of all sizes on sale and made to order. A pair of extra strong wrought-iron fire-proof folding-doors with ventilating gates, made expressly for a banker's strong room, may be viewed at his manufactory. Strong wrought-iron doors for party walls, with wrought-iron rabitted frames, and secured by the BEST DETECTOR LOCKS in ENGLAND, 6 feet high by 2 feet 3 inches wide and upwards, price 10l. each, always on hand at LEADBEATER'S MANUFACTORY 193, ALDERSGATE-STREET, LONDON.

By Her Majesty's Royal Letters Patent.

PITT'S PATENT SELF-ADJUSTING DOOR KNOBS AND LOOSE SPINDLES.



HART and SONS beg to invite the attention of architects, builders, and others, to their Door Furniture, mounted for PITT'S PATENTED SPINDLES. The knobs are stronger, more durable, and more elegant in form, than those in ordinary use, as the spindles, being loose, do not require the objectionable side screw. They are more readily fixed, are suitable for every description of lock now in use and, as they adjust themselves to doors of different thicknesses, without alteration, are particularly adapted for the country or for exportation.

In addition to an extensive stock of door furniture in china, crystal, amber, and opal glass, buffalo horn, ivory, ebony, brass, &c., en suite, with finger-plates, bell-pulls, and levers, new patterns of original design are constantly being added, and an order either to sketch or pattern supplied very promptly. A simple one, for example, in three days, and a more elaborate one in less than a week.—May be obtained through any ironmonger, or direct from the proprietors and sole manufacturers, HART and SONS Wholesale Ironmongers, 53, 54, 55, Wych-street, Strand, London.

A list of prices sent on application.